

Steeles Crossing  
-to-  
Gingerichs Corners

7

LEVEL BOOK  
1307

PLEASE RETURN TO  
GEAUGA COUNTY ENGINEER  
COURT HOUSE  
CHARDON, O.  
PHONE 250-X

Book 7

X Sections & slopes

BURTON-TROY TOWNSHIP to S. R. 87

CLARIDON - TROY ROAD  
AND C. H. # 3 (Gingerich's  
Corners road) Pg 1-104

71

1/ BMs on Tray Rd #447 H. Elwell  
May 6th, 1919 Grav.

Sta.	+	HI	-	Elev.
B.M.				1102.05
B.M.	6.83	1108.88	2.73	1106.15
T.P.	3.58	1105.52	6.94	1101.94
B.M.#21			4.65	1100.87
T.P.	5.24	1106.11	2.78	1103.39
B.M.#20	6.78	1110.16	3.84	1106.32
T.P.	7.51	1113.83	1.65	1112.18
B.M.#19	4.96	1117.14	2.86	1114.28
T.P.	3.59	1117.24	3.49	1113.65
B.M.#18	1.53	1113.99	4.78	1112.46
T.P.	5.87	1118.89	0.97	1113.02
B.M.#17	3.34	1118.16	4.07	1114.82
T.P.	4.13	1117.07	5.22	1112.94
B.M.#16			5.00	1112.07
T.P.	0.64	1110.74	6.97	1110.10
B.M.#15			4.60	1106.14
T.P.	9.25	1118.46	1.53	1109.21
T.P.	12.39	1130.47	0.38	1118.08
T.P.	10.89	1141.15	0.21	1130.26
B.M.#14			3.03	1138.12
T.P.	12.16	1152.64	0.67	1140.98
T.P.	12.26	1163.55	1.35	1151.29
T.P.	11.80	1175.24	0.11	1163.44

2  
B.M. Tacks, notch of large stump to R+N of W  
End Big Bridge.

S.E. cor. Abutment S. end Big Bridge.

+ in East end Paved Road opp. Fence line on 447 H.

+ on N.E. cor. East Parapet <sup>Sta 154+40</sup> Stone Culvert

3 Nails N.E. Root <sup>Sta 151</sup> 16" Maple <sup>on South Side Rd</sup> at 2nd Turn in Rd.

S.E. Root (3 Nails) <sup>Sta 144+60</sup> 16" Maple on W. Side Rd.

3 Nails N. Root <sup>Sta 133+80</sup> 24" Hickory N. turn on S. Side Rd.

1 Nail S. Root <sup>Sta 122+47</sup> 40" Elm in field W. Side Rd. at Turn.

+ S.W. Abutment <sup>Sta 119+87</sup> Stone + Wood Culvert

3 Nails Top <sup>Sta 106+10</sup> 40" Chestnut Stump <sup>on East Side Rd</sup> West side a Ave & Laze

Sta	+	HI	-	Elev.
		1175.24		
T.P.	11.31	1185.82	0.73	1174.51
T.P.	11.38	1197.04	0.16	1185.66
T.P.	10.54	1206.88	0.70	1196.34
B.M.#13			5.84	1201.01
T.P.	9.55	1215.96	0.48	1206.41
T.P.	9.55	1224.40	1.11	1214.85
T.P.	4.25	1226.09	2.56	1221.84
B.M.#12			4.44	1221.62
T.P.	1.79	1220.64	7.24	1218.85
T.P.	1.10	1214.32	7.42	1213.22
B.M.#11			5.27	1209.05
T.P.	1.29	1204.10	11.51	1202.81
T.P.	0.65	1192.68	12.07	1192.03
T.P.	0.89	1182.51	11.06	1181.62
T.P.	1.11	1171.53	12.09	1170.42
B.M.#10	0.43	1162.47	9.49	1162.04
B.M.#9			2.16	1160.31
T.P.	0.99	1153.76	9.50	1152.97
B.M.#8	1.92	1150.11	5.57	1148.19
T.P.	1.02	1141.78	9.35	1140.76
B.M.#7	1.40	1132.52	10.66	1131.12
T.P.	0.22	1119.77	12.97	1119.55
B.M.#6	6.77	1122.59	3.95	1115.82

May 7.  
Cloudy  
Showers.

3 Nails North Root 36" Chestnut <sup>Sta 98+45</sup> W. Side Rd.

2 Nails West Root <sup>Sta 89</sup> 24" Oak <sup>house of Mr. McGinn</sup> East Side Rd. in front

1 Nail East Root <sup>Sta. 77+82</sup> 24" Pine West Side Rd. in front <sup>of Mr. Newcomb</sup> res.

X S.W. cor West Abutment Stone Culvert Sta 65+32

3 Nails W. Root 24" Maple E. Side Rd. Sta. 64.

3 Nails W. Root 30" Maple East Side Rd. Sta-57+10

3 Nails W. Root 24" Pine E Side Rd. Sta-49+60

X N.W. Cor. Stone Abotment <sup>(North)</sup> Iron Bridge <sup>Sta 45+33</sup>

Sta.	+	HI	-	Elev.
		1122.59		
T.P.	10.75	1132.43	0.91	1121.68
T.P.	9.72	1141.18	0.97	1131.46
T.P.	1.91	1141.59	1.50	1139.68
B.M.#5	7.82	1138.70	10.71	1130.88
B.M.#4	4.49	1140.99	2.20	1136.50
B.M.#3	5.50	1143.91	2.58	1138.41
T.P.	5.07	1148.38	0.60	1143.31
B.M.#2	1.41	1146.22	3.57	1144.81
T.P.	6.30	1144.50	8.02	1138.20
T.P.	7.74	1147.19	5.05	1139.45
T.P.	6.17	1152.00	1.36	1145.83
B.M.#1	3.09	1150.22	4.87	1147.13
B.M.			10.51	1139.71

Sta. 34+77  
Sta. 42+75  
x N.E. cor. west Parapet Stone Culvert.  
3 Nails East Root 30" Maple West Side Rd. center  
Tree in rt F. Bocha  
Top x Sta. 34+77  
x N.W. cor. West Parapet Stone Culvert.

Sta. 19+53  
E.P. Gotham  
3 Nails East Root 4.8" Elm East Side Rd. S.W. Res.

Sta. 34+56  
3 Nails N.E. Root 24" Maple West Side Rd. 2nd Tree  
From South in rt - Joe Stawicki  
x N.E. cor. East Parapet Stone Culvert South of  
Steel's King.

BM's from Steele's Crossing to Troy  
 1 PM. May 7th-18. Elwell & Grau.

Sta.	+ HI	-	Elev.
B.M.	6.56	1146.27	1139.71
T.P.	4.40	1146.14	4.53 1141.74
T.P.	5.05	1141.53	9.66 1136.48
B.M.		4.36	1137.17
B.M.	2.45	1139.24	4.74 1136.79
T.P.	5.81	1141.73	3.32 1135.92
B.M.		3.85	1137.89
T.P.	1.90	1140.21	3.42 1138.31
T.P.	1.10	1139.94	1.34 1139.87
T.P.	4.43	1134.86	9.54 1130.43
B.M.	10.21	1133.03	12.04 1122.82
T.P.	4.74	1132.79	4.98 1128.05
B.M.		3.34	1129.45
B.M.		1.34	1131.42
T.P.	6.40	1138.88	0.31 1132.48
T.P.	5.07	1141.48	2.47 1136.41
B.M.	1.96	1139.18	4.26 1137.22
T.P.	1.47	1128.16	12.49 1126.69
B.M.	11.81	1131.74	8.23 1119.93
T.P.	7.52	1138.69	0.57 1131.17
B.M.	6.33	1138.33	6.69 1132.00
B.M.		8.41	1129.92
B.M.	6.32	1142.65	2.00 1136.33
B.M.	5.22	1147.30	0.57 1142.08

x N.E. Cor. East Parapet Stone Culvert south of Steele's Crossing

3 Nails East Root 30" Maple West Side Rd. <sup>Rest - Fred S. Litor,</sup> North of Drive

x N.E. cor. W. Parapet Stone Culvert North of G.W. Litch

3 Nails W. Root 18" Maple East Side Rd. 5th tree <sup>John H. Litch</sup> South of

x N.W. cor. <sup>Parapet</sup> W. Culvert under old tracks <sup>Oh Silverbrook Creamery.</sup> East Side Rd.

x S.W. cor. West Parapet West Side Rd. North of <sup>Farm</sup> Thrasher

3 Nails East Root 30" Maple W. Side Rd. " " " "

3 Nails East Root 24" Maple W. Side Rd. <sup>Mike Shalashnoe.</sup> in ft

x N.W. Cor. West Wing Wall Iron Bridge <sup>Shalashnoe.</sup> South of M. Ke

x N.W. Cor. West Parapet Stone Culvert <sup>E. B. Hozer</sup> South of

3 Nails W. Root 16" Maple W. Side Rd. S.W. of above Culvert

x N.W. cor. West Parapet Stone Culvert North of <sup>H.V. Russell.</sup>

3 Nails East Root - 30" Maple W. Side Rd. 1st tree in Hedge North of H.V. Russell.

May 8th. Cloudy.

Sta-	+	HI	-	Elev
		1147.30		
T.P.	1.10	1136.72	11.68	1135.62
B.M.	10.48	1136.07	11.13	1125.59
T.P.	11.66	1147.09	0.64	1135.43
B.M.			3.23	1143.86
T.P.	10.87	1157.54	0.42	1146.67
T.P.	8.20	1165.09	0.65	1156.89
T.P.	10.64	1175.21	0.52	1164.57
T.P.	11.02	1185.35	0.68	1174.53
T.P.	11.85	1196.67	0.73	1184.82
T.P.	11.54	1208.01	0.20	1196.47
T.P.	11.54	1219.12	0.43	1207.58
T.P.	9.50	1227.88	0.74	1218.38
T.P.	3.26	1229.87	1.27	1226.61
B.M.			2.52	1227.35
				1227.204

of H.V. Russell,  
 x N.E. cor. East Abatement Station Wood Bridge South  
 H.M. Turner,  
 3 Nails N.E. Root 24 Maple W. Side Rd. South of Drive to cor.

U.S. B.M. Troy Center - Welchfield - N.W. cor.  
 Foundation of schoolhouse. Aluminum  
 tablet stamped 1227 A.D.J. 1903.  
 Elev - 1227.204



1/11/11

1/12/11

1/13/11

1/14/11

1/15/11

1/16/11

1/17/11

1/18/11

1/19/11

1/20/11

1/21/11

1/11/11

1/12/11

1/13/11

1/14/11

1/15/11

1/16/11

1/17/11

1/18/11

1/19/11

1/20/11

1/21/11

15 Cross-Section and Profile:  
 770y Rd. May 15th-19. ELwell  
 Showers Cloudy. Gran-

Sta.	+ H.I.	- Elev.	
	11.03	1150.74	1139.71
0+00		11.3	1139.4 ✓ ✓
0+30		10.7	1140.0 ✓ ✓
1.		9.0	1141.7 ✓ ✓
2		6.4	1144.3 ✓ ✓
3		5.1	1145.6 ✓ ✓ Edge Drive 12' W.
3+12		4.9	1145.8 ✓ ✓ Edge Drive
3+45		4.3	1146.4 ✓ ✓ Edge Drive 12' W.
B.M. #1	5.32	1152.45	3.62 1147.13 1147.12

4		5.2	1147.3 ✓
5		8.2	1144.3 ✓

x N.E. cor. East Parapet Stone culvert south of Steele's Xing. 0-43

-0.6	-0.5	-0.2	+0.1	+0.4	-0.1	
<del>11.9</del>	<del>11.8</del>	<del>11.5</del>	11.3	11.2	<del>10.9</del>	<del>11.1</del> ✓
25.0	30.0	4.0	0.0	12.0	14.0	25.0
-0.5	-0.6		+0.2		-0.3	
<del>11.2</del>	<del>11.3</del>	10.7	<del>10.5</del>		<del>11.0</del>	✓
25.0	7.0	0.0	13.0		25.0	
+0.4	-0.6	-0.1	+0.2	-0.4	+1.0	+1.8
<del>9.6</del>	<del>9.6</del>	<del>9.1</del>	9.0	<del>8.9</del>	<del>9.4</del>	<del>8.0</del> 9.2 ✓
25.0	13.0	8.0	0.0	12.0	13.0	19.0 25.0
-0.6	-1.1	-0.5		-0.3	+1.5	+2.2
<del>10.7</del>	<del>7.5</del>	<del>6.9</del>	6.4	<del>6.7</del>	<del>4.9</del>	<del>4.2</del> ✓
25.0	15.0	11.0	0.0	12.0	19.0	25.0
+0.5	-0.2		0.0	+1.3	+1.8	
<del>4.6</del>	<del>5.8</del>	5.1	<del>5.1</del>	<del>3.5</del>	<del>3.9</del>	✓
25.0	19.0	0.0	7.0	25.0	35.0	
+0.2	-0.1		-0.1	+1.1	+1.5	
<del>4.4</del>	<del>5.2</del>	4.9	<del>5.0</del>	<del>3.5</del>	<del>3.4</del>	✓
25.0	19.0	0.0	3.0	25.0	35.0	
-0.2	+0.1		0.0	+1.3	+2.3	
<del>4.5</del>	<del>4.2</del>	4.3	<del>4.3</del>	<del>3.0</del>	<del>2.4</del>	✓
75.0	25.0	0.0	7.0	11.0	25.0	

1147.13  
 3 Marks. N.E. Root 24" Maple West Side Rd. 2nd. Tric. Sta. 3+56

-0.2	0.0		-0.8	+0.9	+2.6	
<del>5.4</del>	<del>5.2</del>	5.2	<del>6.0</del>	<del>1.3</del>	<del>2.6</del>	✓
25.0	15.0	0.0	3.0	6.0	25.0	
-1.0	+0.5	-0.1		+2.4	+4.3	
<del>9.2</del>	<del>7.7</del>	<del>8.3</del>	8.2	<del>5.5</del>	<del>3.9</del>	✓
35.0	25.0	19.0	0.0	5.0	25.0	

Sta. + HI - Elev

1152.45

6 10.2 1142.3 ✓

6+85 10.6 1141.9 ✓

7 11.6 1140.9 ✓

T.P. 2.54 1143.81 11.18 1141.27

8 5.7 1138.1 ✓

8+66.02 6.8 1137.0 ✓

9 6.7 1137.1 ✓

9+3

9+35 6.7 1137.4 ✓  
2 Drive 12' W

T.P. 7.13 1147.17 3.77 1140.04

10 9.1 1139.1 ✓

Σ

-1.2 -0.4 +0.4 +2.9  
~~11.4~~ ~~10.6~~ ~~10.2~~ ~~9.5~~ ~~7.8~~ ✓  
 25.0 20.0 0.0 10.0 25.0

+0.2 +0.2 -0.3 +0.2 +0.6 -0.9 +0.1 +1.7 +3.8 +4.8 ✓  
~~10.4~~ ~~10.7~~ ~~10.9~~ ~~10.4~~ ~~10.0~~ ~~10.6~~ ~~11.5~~ ~~10.5~~ ~~9.9~~ ~~6.8~~ ~~5.8~~  
 25.0 23.0 22.0 19.0 11.0 0.0 2.0 4.0 14.0 19.0 25.0

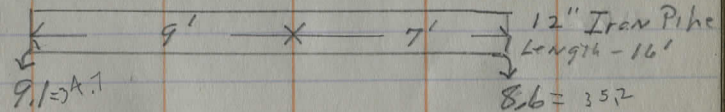
+0.8 +0.6 +0.9 +2.1 +5.3 +5.6 ✓  
~~10.8~~ ~~11.0~~ ~~10.7~~ ~~11.6~~ ~~9.5~~ ~~6.3~~ ~~6.0~~ ✓  
 25.0 20.0 8.0 0.0 13.0 20.0 25.0

-0.9 -0.7 -0.1 -0.7 -0.1 +0.4 +4.6 +5.1 ✓  
~~6.6~~ ~~6.4~~ ~~5.8~~ ~~5.7~~ ~~6.4~~ ~~5.8~~ ~~5.3~~ ~~1.1~~ ~~0.6~~  
 25.0 22.0 20.0 0.0 1.0 2.0 6.0 19.0 25.0

-2.3 -1.2 +0.3 -0.1 +0.2 +0.5 +0.2 ✓  
~~9.1~~ ~~8.8~~ ~~6.5~~ ~~6.8~~ ~~6.9~~ ~~6.6~~ ~~6.3~~ ~~6.6~~ ✓  
 25.0 12.0 10.0 0.0 8.0 9.0 22.0 25.0

-2.3 -1.2 -1.8 -0.2 +0.1 -1.2 -0.6 -0.3 +0.1 -0.3 ✓  
~~9.0~~ ~~7.9~~ ~~9.5~~ ~~6.9~~ ~~6.7~~ ~~6.6~~ ~~7.9~~ ~~7.3~~ ~~6.9~~ ~~6.6~~ ~~6.4~~  
 25.0 13.0 12.0 9.0 0.0 7.0 10.0 11.0 19.0 22.0 25.0

No good  
log'd  
new



-1.9 -1.1 -0.3 +0.4 +0.9 +2.2 ✓  
~~8.3~~ ~~7.5~~ ~~6.7~~ ~~6.4~~ ~~6.0~~ ~~5.5~~ ~~4.2~~ ✓  
 25.0 16.0 13.0 0.0 17.0 24.0 35.0

-0.9 -0.6 -0.9 -0.3 -0.4 +1.0 +3.1 +4.1 ✓  
~~10.0~~ ~~9.4~~ ~~10.2~~ ~~9.4~~ ~~9.1~~ ~~9.5~~ ~~9.1~~ ~~6.0~~ ~~5.0~~ ✓  
 25.0 19.0 17.0 15.0 0.0 9.0 12.0 18.0 25.0

Σ

Sta + HI - Elev.

1147.17

11 7.3 1139.9 ✓

12 7.2 1140.0 ✓

12+75  $\varnothing$ 

13 8.1 1139.1 ✓

T.P. 4.39 1145.68 5.85 1191.29

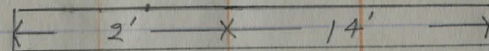
14 6.3 1139.4 ✓

15 7.0 1139.7 ✓

15+94  $\varnothing$  Pipe

16 7.6 1138.1 ✓

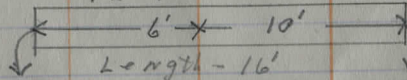
16+39  $\varnothing$  Pipe16+80  $\varnothing$  12" Pipe
$$\begin{array}{r} -1.2 -1.2 -0.4 -0.3 +1.3 +3.4 \\ \underline{8.5} \quad \underline{8.5} \quad \underline{7.7} \quad \underline{7.3} \quad \underline{7.1} \quad \underline{6.0} \quad \underline{3.9} \quad \checkmark \\ 25.0 \quad 16.0 \quad 12.0 \quad 0.0 \quad 9.0 \quad 13.0 \quad 25.0 \end{array}$$

$$\begin{array}{r} -1.0 -0.4 -1.6 -0.1 -0.2 -0.5 -0.1 +0.5 +3.3 +4.4 \\ \underline{8.9} \quad \underline{7.6} \quad \underline{8.8} \quad \underline{7.3} \quad \underline{7.2} \quad \underline{7.4} \quad \underline{7.7} \quad \underline{7.3} \quad \underline{6.7} \quad \underline{5.8} \quad \underline{2.8} \\ 25.0 \quad 13.0 \quad 10.0 \quad 8.0 \quad 0.0 \quad 12.0 \quad 14.0 \quad 15.0 \quad 20.0 \quad 25.0 \quad 35.0 \end{array}$$
Road  
New  
Filled up.12" Iron  
Pipe.  
16' Length.
$$\begin{array}{r} -2.5 -1.2 +0.4 -0.6 +0.5 +0.7 +2.4 \\ \underline{10.6} \quad \underline{9.3} \quad \underline{8.1} \quad \underline{7.7} \quad \underline{8.4} \quad \underline{7.6} \quad \underline{7.4} \quad \underline{5.7} \quad \checkmark \\ 25.0 \quad 4.0 \quad 0.0 \quad 12.0 \quad 19.0 \quad 20.0 \quad 25.0 \quad 35.0 \end{array}$$

$$\begin{array}{r} -2.1 -1.2 -0.5 +0.3 -0.5 +0.1 +1.1 +3.5 \\ \underline{9.4} \quad \underline{7.5} \quad \underline{6.8} \quad \underline{6.3} \quad \underline{6.0} \quad \underline{6.5} \quad \underline{6.2} \quad \underline{5.2} \quad \underline{2.8} \quad \checkmark \\ 25.0 \quad 5.0 \quad 4.0 \quad 0.0 \quad 17.0 \quad 19.0 \quad 20.0 \quad 25.0 \quad 35.0 \end{array}$$

$$\begin{array}{r} -2.0 -0.9 -0.1 +0.4 +1.1 +0.1 +1.4 +3.6 \\ \underline{9.0} \quad \underline{7.9} \quad \underline{7.1} \quad \underline{7.0} \quad \underline{6.6} \quad \underline{5.9} \quad \underline{6.7} \quad \underline{5.6} \quad \underline{3.9} \quad \checkmark \\ 25.0 \quad 4.0 \quad 3.0 \quad 0.0 \quad 14.0 \quad 20.0 \quad 21.0 \quad 25.0 \quad 35.0 \end{array}$$

12" Pipe



Length - 16'

4"  
Dia 4"

9.5 = 36.2

36.4 = 9.3

8.9

$$\begin{array}{r} -1.3 -0.8 -1.5 -0.7 +0.4 -1.4 +0.1 +0.6 \\ \underline{8.9} \quad \underline{8.4} \quad \underline{9.1} \quad \underline{8.3} \quad \underline{7.6} \quad \underline{7.2} \quad \underline{9.0} \quad \underline{7.5} \quad \underline{7.0} \quad \checkmark \\ 25.0 \quad 9.0 \quad 7.0 \quad 5.0 \quad 0.0 \quad 15.0 \quad 21.0 \quad 22.0 \quad 25.0 \end{array}$$

Dia 4"

-0.5

-0.2

-0.9 +0.1

8.9 +0.7

8.1

7.6

7.8

8.5 7.5

6.9

35.0

0.0

15.0

18.0 19.0

25.0 ✓

Sta	+	HI	-	Elev.
		1145.68		
17			7.4	1138.3 ✓
17+15				∅ Pipe
17+41				∅ Pipe
18			6.2	1139.5 ✓
19			3.8	1141.9 ✓
B.M. #2	4.25	1149.06	0.84	<del>1144.81</del> 1144.81
19+80				∅ Pipe
20			6.7	1142.4 ✓
20+40				∅ Pipe
20+65			6.9	1142.2 ✓ 12' W. Driveway
21			6.9	1142.2 ✓
21+45			7.6	1141.5 ✓ 12' W. Driveway

$$\begin{array}{r} -0.2 \quad -0.3 \quad -0.6 \quad -0.2 \quad -0.1 \quad -1.2 \quad -0.2 \quad +0.9 \\ \underline{7.6} \quad \underline{7.3} \quad \underline{7.6} \quad \underline{7.4} \quad \underline{7.5} \quad \underline{7.6} \quad \underline{7.6} \quad \underline{6.5} \\ 25.0 \quad 10.0 \quad 9.0 \quad 7.0 \quad 0.0 \quad 13.0 \quad 17.0 \quad 25.0 \end{array} \quad \checkmark$$

4" Dia.  
8.3

4" Dia.  
8.2

$$\begin{array}{r} +1.3 \quad +0.9 \quad -0.4 \quad -0.1 \quad -1.1 \quad +0.5 \\ \underline{4.9} \quad \underline{5.3} \quad \underline{6.6} \quad \underline{6.2} \quad \underline{6.3} \quad \underline{7.3} \quad \underline{5.7} \quad \underline{7.9} \\ 25.0 \quad 16.0 \quad 9.0 \quad 0.0 \quad 13.0 \quad 16.0 \quad 18.0 \quad 25.0 \end{array} \quad +1.3 \quad \checkmark$$

$$\begin{array}{r} +0.3 \quad +0.3 \quad -0.6 \quad -0.1 \quad -0.1 \quad -1.5 \quad +0.1 \quad +0.7 \\ \underline{3.5} \quad \underline{3.5} \quad \underline{4.3} \quad \underline{3.9} \quad \underline{3.8} \quad \underline{3.9} \quad \underline{5.3} \quad \underline{3.7} \quad \underline{3.1} \\ 25.0 \quad 17.0 \quad 6.0 \quad 4.0 \quad 0.0 \quad 14.0 \quad 17.0 \quad 20.0 \quad 25.0 \end{array} \quad \checkmark$$

1144.81  
3 Nails East Root 48" Elm. East Side Rd S.W. Res.

E.P. Gotham

4" Dia.  
7.3

$$\begin{array}{r} -0.9 \quad -0.1 \quad -0.6 \quad +0.1 \quad -0.1 \quad -1.1 \quad +0.2 \quad +1.1 \\ \underline{7.6} \quad \underline{6.8} \quad \underline{7.3} \quad \underline{6.6} \quad \underline{6.7} \quad \underline{6.8} \quad \underline{7.8} \quad \underline{6.5} \quad \underline{5.6} \\ 25.0 \quad 9.0 \quad 8.0 \quad 5.0 \quad 0.0 \quad 13.0 \quad 17.0 \quad 19.0 \quad 25.0 \end{array} \quad \checkmark$$

4" Dia.  
7.4

$$\begin{array}{r} -1.0 \quad -0.1 \quad -0.4 \quad +1.0 \quad +1.4 \\ \underline{7.9} \quad \underline{7.0} \quad \underline{7.3} \quad \underline{6.9} \quad \underline{5.9} \quad \underline{5.5} \\ 25.0 \quad 11.0 \quad 8.0 \quad 0.0 \quad 25.0 \quad 35.0 \end{array} \quad \checkmark$$

$$\begin{array}{r} -1.0 \quad -0.2 \quad -0.7 \quad -0.3 \quad +0.2 \quad +1.0 \\ \underline{7.9} \quad \underline{7.7} \quad \underline{7.6} \quad \underline{7.2} \quad \underline{6.9} \quad \underline{6.7} \quad \underline{5.9} \\ 25.0 \quad 10.0 \quad 9.0 \quad 6.0 \quad 0.0 \quad 11.0 \quad 25.0 \end{array} \quad \checkmark$$

$$\begin{array}{r} -0.4 \quad +0.2 \quad -0.3 \quad +1.4 \quad +1.9 \\ \underline{8.0} \quad \underline{7.4} \quad \underline{7.4} \quad \underline{7.6} \quad \underline{6.2} \quad \underline{5.7} \\ 25.0 \quad 9.0 \quad 8.0 \quad 0.0 \quad 25.0 \quad 35.0 \end{array} \quad \checkmark$$

∅

Sta + HI - Elev.

1149.06

22 7.8 1141.3 ✓

22+38  $\phi$  Pipe.

23 8.5 1140.6 ✓

T.P. 1.52 1141.68 8.90 1140.16

24 2.2 1139.5 ✓

25 4.4 1137.3 ✓

26 5.7 1136.0 ✓

26+93 4.8 1136.9  $\phi$  Bridge

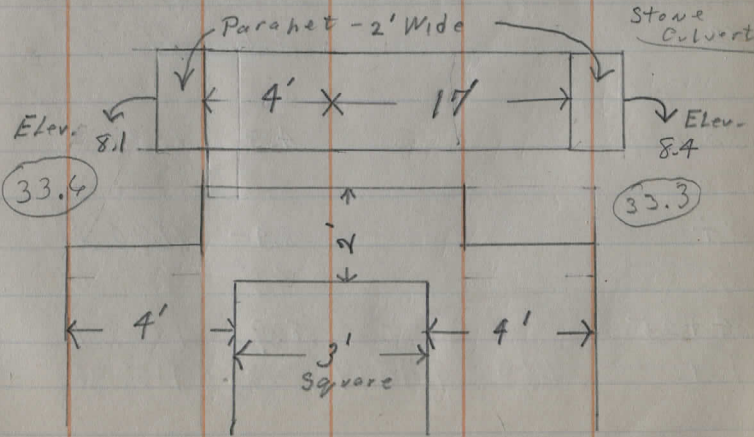
-1.3	0.0	-0.8	-0.1	-0.1	+0.4
<del>7.1</del>	<del>7.8</del>	<del>8.6</del>	<del>7.9</del>	<del>7.8</del>	<del>7.9</del>
25.0	10.0	8.0	6.0	0.0	14.0
					25.0

-0.8	-0.6	-1.0	-0.4	+0.2	-1.3	-0.2	+0.2
<del>9.3</del>	<del>9.1</del>	<del>9.5</del>	<del>8.9</del>	<del>8.5</del>	<del>8.3</del>	<del>9.7</del>	<del>8.4</del>
25.0	10.0	8.0	6.0	0.0	12.0	15.0	18.0
							25.0

+0.4	-0.3	-0.9	0.0	0.0	-1.1	+0.1	+0.6
<del>1.8</del>	<del>2.5</del>	<del>3.1</del>	<del>2.2</del>	<del>2.2</del>	<del>2.2</del>	<del>3.3</del>	<del>2.1</del>
25.0	8.0	7.0	4.0	0.0	13.0	16.0	18.0
							25.0

-0.1	-0.1	-0.3	-1.1	+0.2	+0.1	-0.9	-0.3	+0.5
<del>7.5</del>	<del>7.5</del>	<del>7.4</del>	<del>5.5</del>	<del>7.2</del>	<del>4.4</del>	<del>4.3</del>	<del>5.3</del>	<del>4.7</del>
25.0	13.0	6.0	5.0	2.0	0.0	14.0	17.0	19.0
								25.0

-1.9	-0.8	-1.3	-0.2	+0.4	-0.6	+0.1	0.0
<del>7.6</del>	<del>6.5</del>	<del>7.0</del>	<del>5.9</del>	<del>5.7</del>	<del>5.3</del>	<del>6.3</del>	<del>5.6</del>
25.0	8.0	6.0	5.0	0.0	14.0	17.0	19.0
							25.0



Sta.	+	HI	-	Elev.
		1141.68		1138.41
B.M.#3	2.10	1140.51	3.25	<del>1138.49</del>

27 3.8 1136.7 ✓

28 5.1 1135.4 ✓

29 4.4 1136.1 ✓

Int.  
E & W. Rd.

30 5.4 1135.1 ✓

31 5.4 1135.1 ✓

Drive  
10' W.

B.M.#4 2.09 1138.59 4.02 1136.50  
~~1136.49~~

32 3.6 1135.0 ✓

33 4.3 1134.3 ✓

34 8.4 1130.2 ✓

34+25 8.9 1129.7 ✓

x N.W. cor. W. Parapet Stone Culvert, Top x. 1138.41

-2.6 -2.1 -0.2 -2.8 -1.7 +0.9  
~~6.4 5.9 3.8 4.0 6.6 5.5 4.7~~ ✓  
25.0 6.0 0.0 15.0 20.0 21.0 25.0

-0.2 -0.2 -0.9 -0.4 +0.4 -0.7 +0.3  
~~5.3 5.3 6.0 5.5 5.1 4.7 5.8 4.8~~ ✓  
25.0 9.0 4.0 3.0 0.0 19.0 22.0 25.0

-8.1 -5.7 -1.7 +0.5 +1.3  
~~12.5 10.1 6.1 4.4 3.9 3.1~~ ✓  
300.0 100.0 25.0 0.0 25.0 100.0

-0.6 -0.5 -0.9 0.0 +0.3 0.0  
~~6.0 5.7 6.3 5.4 5.4 5.1 5.4~~ ✓  
25.0 3.0 2.0 0.0 17.0 19.0 25.0

+0.2 +0.2 0.0 -1.5 -0.6 -0.6  
~~5.2 5.2 5.4 5.4 6.4 6.0 6.0~~ ✓  
35.0 25.0 0.0 6.0 8.0 19.0 25.0

1136.50

3 Nails East Root 30" Maple W. Side Rd. centre Tree in front F. Bouha

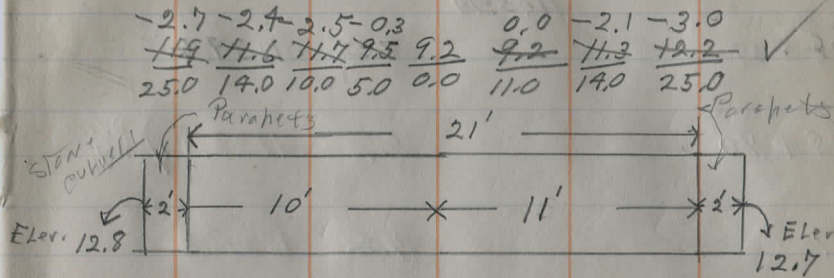
+0.4 +0.2 -0.8 -0.1 -0.3 -1.9 +1.8 +0.9  
~~3.2 3.4 4.4 3.7 3.6 3.9 5.5 7.8 2.7~~ ✓  
25.0 10.0 9.0 8.0 0.0 12.0 14.0 19.0 25.0

+0.2 -0.5 -1.5 -0.2 +0.1 -2.4 +0.8 +0.9  
~~4.1 4.8 5.8 4.5 4.3 4.2 6.7 2.5 3.4~~ ✓  
25.0 12.0 11.0 7.0 0.0 9.0 13.0 18.0 25.0

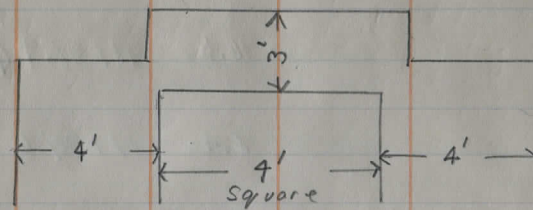
+1.8 +1.0 -0.9 -1.5 +0.4 -0.2 -1.1 -0.3 +1.5 +1.8  
~~6.6 7.4 9.3 9.9 8.0 8.4 8.6 9.5 8.7 5.7 6.6~~ ✓  
25.0 17.0 13.0 8.0 6.0 0.0 10.0 13.0 15.0 25.0 35.0

+1.6 +0.8 -1.5 -2.0 -0.2 -0.1 -1.1 -2.2 -1.6 -2.4  
~~4.3 5.1 10.4 10.9 9.1 8.9 9.0 10.0 11.1 10.5 11.2~~ ✓  
25.0 18.0 10.0 8.0 5.0 0.0 10.0 12.0 19.0 20.0 25.0

Sta.	+	HI	-	Elev.
		1138.59		
34+65			9.2	1129.4 ✓
34+47			9.3	1129.3 ✓ Bridge
35			9.2	1129.4 ✓
B.M. #5	7.74	1138.65	4.91	1130.88 ✓
35+50			8.8	1129.9 ✓
36			8.0	1130.7 ✓
37			4.7	1134.0 ✓
T.P.	7.63	1145.99	0.29	1138.36 ✓



O.K.



-2.7	-2.4	-2.5	-0.3	0.0	-2.1	-3.0	
<del>11.9</del>	<del>11.6</del>	<del>11.7</del>	<del>9.5</del>	<del>9.2</del>	<del>9.2</del>	<del>11.3</del>	<del>12.2</del>
25.0	14.0	10.0	5.0	0.0	11.0	14.0	25.0

1130.50  
X N.E. cor. W. Parapet Stone Culvert at Sta 34+77

+0.2	-1.2	-1.8	-0.2	-0.4	-1.1	-0.7	-1.5	-0.5	0.0	
<del>8.6</del>	<del>10.0</del>	<del>10.6</del>	<del>9.0</del>	<del>8.8</del>	<del>9.2</del>	<del>7.7</del>	<del>7.5</del>	<del>10.3</del>	<del>9.3</del>	<del>8.5</del>
25.0	12.0	11.0	8.0	0.0	11.0	12.0	14.0	16.0	17.0	25.0
+1.8	+1.9	-1.2	-0.1	-0.3	-0.9	+1.6	+1.9			
<del>6.0</del>	<del>8.1</del>	<del>7.0</del>	<del>8.1</del>	<del>8.0</del>	<del>8.3</del>	<del>8.9</del>	<del>6.4</del>	<del>6.1</del>		
25.0	20.0	10.0	7.0	0.0	12.0	13.0	20.0	25.0		
+4.7	+0.3	-1.4	-0.6	-0.4	-1.3	+1.1	+2.9	+3.8		
<del>0.0</del>	<del>1.8</del>	<del>6.1</del>	<del>5.3</del>	<del>4.7</del>	<del>5.1</del>	<del>6.0</del>	<del>7.6</del>	<del>1.8</del>	<del>0.9</del>	
25.0	15.0	9.0	8.0	0.0	10.0	11.0	19.0	20.0	25.0	

Sta. + HI - Elev.

1145.99

35

8.5 1137.5

38+70

7.7 1138.3

39

7.2 1138.8

39+30

6.6 1139.4

40

6.4 1139.6

40+25

7.1 1138.9

40+37

7.5 1138.5

40+60

8.4 1137.6

40+69

8.9 1137.1

41

9.6 1136.4

T.P. 1.03 1141.56 5.46 1140.53

-1.0 -0.1 -0.8 -0.2 -1.4 +0.6 +0.9

~~8.5 8.6 8.3 8.5 8.7 8.8 8.8~~  
25.0 11.0 9.0 0.0 9.0 11.0 14.0 25.0

-0.3 -0.2 -0.1 -0.7 +0.3 +1.4

~~8.0 7.9 7.7 7.8 8.4 7.4~~  
35.0 25.0 0.0 10.0 11.0 13.0 25.0

+1.3 +0.5 -0.2 -0.1 -0.8 +2.1

~~5.8 6.7 7.4 7.2 7.3 8.0 5.1~~  
25.0 20.0 10.0 0.0 11.0 12.0 25.0

+0.8 +0.5 +0.6 -0.1 0.0 -0.6 +2.1

~~5.8 6.1 6.1 6.7 6.6 6.6 7.2 4.5~~  
35.0 25.0 20.0 10.0 0.0 10.0 11.0 25.0

+1.3 +1.2 -0.3 0.0 -0.6 +0.3 +2.6 +2.9

~~5.7 5.2 6.7 6.4 6.4 7.0 6.7 2.8 3.5~~  
25.0 14.0 12.0 0.0 12.0 13.0 18.0 21.0 25.0

+1.6 +1.8 -0.9 +0.2 +1.4 +3.6

~~5.5 5.9 8.0 7.1 6.9 5.7 5.5~~  
25.0 16.0 12.0 0.0 12.0 25.0 35.0

+2.1 +2.1 -0.8 -0.1 -0.5 +4.1

~~5.4 5.2 8.3 7.5 7.6 8.0 3.4~~  
25.0 18.0 13.0 0.0 12.0 13.0 25.0

+3.2 +3.0 -1.1 -0.3 +0.2 -0.6 +0.2 +5.0

~~5.7 5.4 7.5 8.7 8.4 8.2 9.0 6.2~~  
35.0 25.0 13.0 6.0 0.0 13.0 14.0 18.0 25.0

+3.7 +3.6 -0.6 -1.3 -0.3 +0.2 -0.5 +0.5 +5.2 +5.5

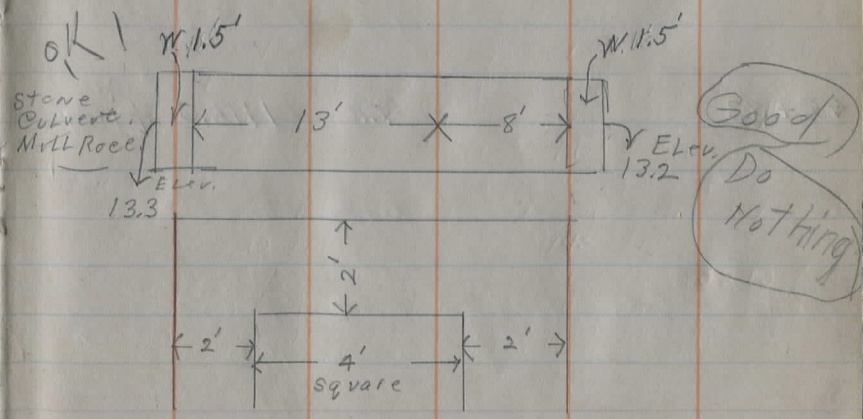
~~5.2 5.3 7.5 7.2 7.2 8.9 8.7 9.4 3.4~~  
35.0 30.0 25.0 16.0 6.0 0.0 13.0 14.0 19.0 25.0 35.0

-3.5 -3.3 -2.8 -0.2 -0.2 -1.0 -0.2 +3.2 +3.9

~~7.7 7.4 7.4 7.7 9.6 7.8 7.6 6.4 5.4~~  
35.0 25.0 13.0 4.0 0.0 14.0 15.0 20.0 25.0 35.0

Sta.	+	HI	-	Elev.
		1141.56		
41+37			7.2	1134.4 ✓
41+70			8.9	1132.7 ✓
42			10.4	1131.2 ✓
T.P.	5.53	1135.42	11.67	1129.89
42+44			6.5	1128.9 ✓
42+68			7.7	1127.7 ✓
43				
42+85			10.1	1125.3 ✓

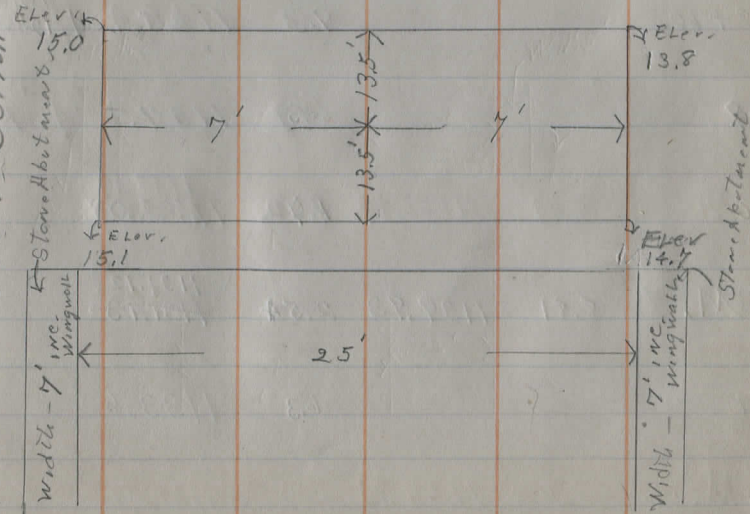
-0.9	-2.7	-2.5	-2.5	0.0	+0.3	-1.2	+1.8
<del>8.1</del>	<del>8.8</del>	<del>7.7</del>	<del>9.7</del>	<del>7.2</del>	7.2	<del>6.9</del>	<del>5.4</del>
40.0	35.0	25.0	15.0	8.0	0.0	13.0	19.0
							25.0
+0.8	+0.9	-1.8	-0.2		-0.1	-1.2	+1.9
<del>8.1</del>	<del>8.0</del>	<del>7.7</del>	<del>9.1</del>	<del>8.9</del>	<del>7.0</del>	<del>7.1</del>	<del>7.0</del>
25.0	20.0	11.0	6.0	0.0	14.0	20.0	25.0
+0.9	+1.2	-1.6	-0.3		+0.1	-1.2	+2.4
<del>9.5</del>	<del>7.2</del>	<del>7.0</del>	<del>7.7</del>	<del>10.4</del>	<del>7.2</del>	<del>7.6</del>	<del>8.0</del>
25.0	18.0	11.0	5.0	0.0	15.0	19.0	25.0
+1.9	+1.2	-1.8	-1.0	-0.2	-0.2	-1.2	-0.6
<del>7.6</del>	<del>5.2</del>	<del>8.8</del>	<del>7.5</del>	<del>6.7</del>	6.5	<del>6.7</del>	<del>7.1</del>
25.0	17.0	11.0	7.0	4.0	0.0	13.0	16.0
							19.0
							25.0
-4.4	-3.2	-1.5	0.0		0.0	-0.8	-0.5
<del>12.1</del>	<del>10.9</del>	<del>9.0</del>	<del>7.7</del>	<del>7.7</del>	<del>7.7</del>	<del>8.5</del>	<del>8.2</del>
35.0	25.0	16.0	6.0	0.0	12.0	13.0	19.0
							25.0



Sta.	+ N.I	-	Elev.
	1135.42		
43		11.0	1124.4
43+9		12.3	1123.1
T.P.	0.33	11250.5	10.70 1124.72
43+50		6.1	1119.0
44		8.6	1116.5
45		9.8	1115.3
45+33		9.1	1116.0

Iron Bridge

OK! Iron Bridge, Plank floor  
Good Condi.



-1.2	-0.2	+0.8		+0.7	-0.6	-2.3	-2.3
<del>12.2</del>	<del>11.8</del>	<del>11.2</del>	11.0	<del>10.2</del>	<del>11.6</del>	<del>13.3</del>	<del>13.3</del>
25.0	13.0	11.0	0.0	9.0	11.0	17.0	25.0
+3.6	+3.3	+2.2	+1.4	+0.5	+2.6	+3.6	
<del>8.4</del>	<del>7.6</del>	<del>7.4</del>	<del>7.2</del>	12.3	<del>11.8</del>	<del>9.7</del>	<del>8.7</del>
25.0	17.0	13.0	12.0	0.0	8.0	12.0	25.0
-5.7	-3.9	-0.5		+0.4	-4.3		
<del>11.8</del>	<del>10.4</del>	<del>6.6</del>	6.1	<del>5.7</del>	<del>10.4</del>		
35.0	25.0	12.0	0.0	11.0	25.0		
-3.0	-2.3	0.5		-0.6	-2.5	-3.1	
<del>11.6</del>	<del>10.9</del>	<del>9.1</del>	8.6	<del>9.2</del>	<del>11.1</del>	<del>11.7</del>	
25.0	16.0	8.0	0.0	11.0	13.0	25.0	
-2.8	-3.6	-3.6	0.0	+0.2	-4.7	-3.0	
<del>12.6</del>	<del>13.4</del>	<del>13.4</del>	<del>8.8</del>	9.8	<del>9.6</del>	<del>14.5</del>	<del>12.8</del>
25.0	19.0	15.0	6.0	0.0	5.0	14.0	25.0

Sta	+ HI	- Elev.
B.M. #6	9.68 1125.45	1115.86
46	11.4	1114.1
47	9.0	1116.5
47+50	7.6	1117.9
T.P.	8.72 1133.67	0.50 1124.95
48	13.1	1120.6
48+60	9.3	1124.4
49	6.3	1127.4
50	1.7	1132.0
B.M. #7	8.81 1139.93	1131.12
51	6.3	1133.6

Driveway  
18'

Driveway  
12' Width

7 N.W. cor. Stone Abutment (North) Iron Bridge 1115.82

-1.1	-0.7	-1.9	-0.1	+0.3	-0.4	+0.4	+0.2	+0.4	
<del>12.2</del>	<del>12.1</del>	<del>13.3</del>	<del>11.5</del>	<del>11.4</del>	<del>11.1</del>	<del>11.8</del>	<del>11.0</del>	<del>11.2</del>	<del>11.0</del>
25.0	18.0	12.0	5.0	0.0	14.0	15.0	16.0	25.0	35.0
-1.4	-0.6	-1.8	+0.3	+0.1	-1.6	-0.9	-0.4		
<del>10.4</del>	<del>7.6</del>	<del>7.8</del>	<del>8.7</del>	<del>9.0</del>	<del>8.9</del>	<del>10.6</del>	<del>9.9</del>	<del>8.4</del>	
25.0	15.0	10.0	3.0	0.0	12.0	13.0	16.0	25.0	
-0.6	-0.1	-1.8	+0.1	+0.2	-2.3	-0.7	-1.0		
<del>8.2</del>	<del>7.4</del>	<del>7.7</del>	<del>7.5</del>	<del>7.6</del>	<del>7.4</del>	<del>7.9</del>	<del>8.3</del>	<del>8.6</del>	
25.0	14.0	10.0	5.0	0.0	11.0	15.0	17.0	25.0	

+6.0	+6.3	+1.3	+0.3	+0.4	+0.2	+1.0	+1.1	-1.5	+3.1
<del>7.7</del>	<del>6.8</del>	<del>11.8</del>	<del>12.8</del>	<del>12.7</del>	<del>13.1</del>	<del>12.9</del>	<del>12.1</del>	<del>12.0</del>	<del>10.0</del>
35.0	25.0	12.0	10.0	5.0	0.0	5.0	8.0	12.0	25.0
+4.8	+4.8	-2.5	-0.3	+0.4	+2.2	+3.6			
<del>9.5</del>	<del>7.5</del>	<del>11.8</del>	<del>9.6</del>	<del>9.3</del>	<del>8.9</del>	<del>7.1</del>	<del>5.7</del>		
25.0	22.0	10.0	6.0	0.0	9.0	25.0	35.0		
+1.8	+2.5	+2.0	-2.7	-0.3	-0.2	-1.7	+2.1	+2.1	
<del>4.5</del>	<del>3.8</del>	<del>7.3</del>	<del>9.0</del>	<del>6.6</del>	<del>6.3</del>	<del>6.5</del>	<del>8.0</del>	<del>7.2</del>	<del>7.0</del>
25.0	22.0	16.0	8.0	3.0	0.0	13.0	16.0	22.0	25.0
+1.1	+1.7	-0.2	-1.3	-0.1	0.0	-0.8	-0.7	+0.2	
<del>8.6</del>	<del>10.0</del>	<del>7.8</del>	<del>8.1</del>	<del>8.1</del>	<del>7.7</del>	<del>7.5</del>	<del>7.4</del>	<del>7.5</del>	
25.0	23.0	11.0	9.0	4.0	0.0	8.0	10.0	16.0	25.0

3 Nails W. Root 24" Pine E. side Rd. 1131.12

+1.1	+1.1	-0.9	+0.1	-0.9	+0.8	+1.0		
<del>5.2</del>	<del>5.2</del>	<del>7.2</del>	<del>6.9</del>	<del>6.9</del>	<del>7.2</del>	<del>5.5</del>	<del>5.3</del>	
25.0	21.0	9.0	0.0	12.0	16.0	20.0	25.0	

Sta.	+	H.I.	-	Elev.
		1139.93		
52			3.9	1136.0 ✓
T.P.	9.77	1149.42	0.28	1139.65
53			10.8	1138.6 ✓
54			7.3	1142.1 ✓
55			4.6	1144.8 ✓
56			3.6	1145.8 ✓ Drive 10'
56+35			3.1	1146.3 ✓ Drive 10'
57			2.9	1146.5 ✓ Drive 10'
B.M. #8	6.91	1153.10	12.2	1148.19 1148.20
58			7.6	1147.5 ✓
B.M. #8	5.62	1153.81		1148.19

+1.4 +0.9 -0.1 -1.4	-0.1 -1.4 -0.1	+0.8 +0.9
<del>2.5</del> <del>3.0</del> <del>4.0</del> <del>5.2</del>	<del>4.0</del> <del>5.3</del> <del>4.0</del>	<del>3.1</del> <del>3.0</del>
25.0 16.0 11.0 9.0	0.0 12.0 15.0 16.0	20.0 25.0
+1.9 +1.4 -1.5 -0.6	0.0 -1.8 +0.6 +1.2	
<del>2.9</del> <del>4.4</del> <del>3.3</del> <del>1.4</del>	<del>10.8</del> <del>10.8</del> <del>12.6</del> <del>12.2</del>	<del>7.6</del>
25.0 16.0 7.0 5.0	0.0 12.0 15.0 19.0	25.0
+2.3 +2.3 -1.4 -0.3	-0.1 -1.4 +1.0 +1.2	
<del>5.0</del> <del>5.0</del> <del>8.7</del> <del>7.6</del>	<del>7.3</del> <del>7.4</del> <del>8.7</del> <del>6.3</del>	<del>6.1</del>
25.0 18.0 9.0 6.0	0.0 13.0 16.0 19.0	25.0
+0.2 +0.2 +0.1 -1.5 -0.3	0.0 -1.5 -0.5 -0.2	
<del>1.1</del> <del>1.1</del> <del>4.5</del> <del>6.1</del> <del>4.9</del>	<del>4.6</del> <del>4.6</del> <del>6.1</del> <del>5.1</del> <del>4.9</del>	
25.0 19.0 12.0 9.0 5.0	0.0 12.0 17.0 19.0 25.0	
+0.5 +0.5 +0.1 -1.1	+0.3 +0.6 +0.3	
<del>2.1</del> <del>3.1</del> <del>3.5</del> <del>4.7</del>	<del>3.6</del> <del>5.3</del> <del>9.0</del> <del>3.3</del>	
25.0 19.0 12.0 11.0	0.0 15.0 25.0 35.0	
-0.2 -0.2 0.0 -0.4	-0.6 -1.0 0.0 +0.1	
<del>3.2</del> <del>5.2</del> <del>3.1</del> <del>3.8</del>	<del>3.1</del> <del>5.7</del> <del>4.1</del> <del>3.1</del> <del>3.0</del>	
35.0 25.0 17.0 9.0	0.0 15.0 16.0 18.0 25.0	
-1.2 -0.7	+0.2 -1.0 -0.1	+0.5
<del>1.1</del> <del>3.6</del>	<del>2.9</del> <del>2.7</del> <del>8.2</del> <del>5.0</del>	<del>2.4</del>
30.0 16.0	0.0 12.0 17.0 18.0	25.0
3 Nails W. Root 30" Maple E. Side Rd. at Sta. 57, 1148.19		
-2.0 -1.1 -0.7 -1.3 -0.3	+0.1 -1.1 -0.6	
<del>7.6</del> <del>8.7</del> <del>8.3</del> <del>8.9</del> <del>4.9</del>	<del>7.6</del> <del>7.5</del> <del>8.7</del> <del>8.2</del>	
25.0 18.0 12.0 7.0 6.0	0.0 12.0 15.0 25.0	
3 Nails W. Root 30" Maple E. Side Rd. at Sta. 57,		







Sta.	+	HJ	-	Elev
		1209.05		
77			5.9	1203.2 ✓
T.P.	10.08	1215.76	3.37	1205.68

78 4" Tile

78 10.5 1205.3 ✓

B.M. #11 6.66 1215.71 6.66 <sup>1209.05</sup> 1209.1078+30 8.3 1207.4 ✓ Drive 10' W.78+85 6.4 1209.3 ✓ Drive 10' W.

79 6.0 1209.7 ✓

80 3.8 1211.9 ✓

81 2.8 1212.9 ✓

T.P. 6.21 1220.86 1.06 1217.65

82 7.0 1213.9 ✓

+2.0	+0.9	-0.4	-1.3	-0.5	-1.3	+0.9	+1.8
<del>3.9</del>	<del>6.8</del>	<del>6.3</del>	<del>7.8</del>	<del>5.9</del>	<del>6.4</del>	<del>7.2</del>	<del>4.1</del>
25.0	17.0	10.0	8.0	0.0	9.0	12.0	15.0
							25.0

+2.5	+0.4	-0.7	-0.1	+0.3	-0.6	+3.0	+3.2
<del>8.0</del>	<del>7.6</del>	<del>7.2</del>	<del>7.6</del>	<del>7.2</del>	<del>7.2</del>	<del>7.5</del>	<del>7.2</del>
25.0	11.0	10.0	7.0	0.0	9.0	13.0	19.0
							25.0

1 Nail E Root 4" Pine W. Side Rd. Infr. Archie Newcomb

+2.5	+2.4	+1.4	0.0	-0.5	+0.5	+2.1
<del>5.8</del>	<del>5.7</del>	<del>6.9</del>	<del>8.3</del>	<del>8.3</del>	<del>8.8</del>	<del>7.8</del>
35.0	25.0	12.0	0.0	11.0	14.0	15.0
						25.0

+2.3	+1.6	-0.3	0.0	-0.3	+1.1	+1.5
<del>4.1</del>	<del>4.8</del>	<del>6.7</del>	<del>6.4</del>	<del>6.7</del>	<del>5.3</del>	<del>4.9</del>
35.0	25.0	7.0	5.0	0.0	10.0	25.0
						35.0

+2.0	+0.7	-0.3	-0.3	+1.2	+1.3
<del>4.9</del>	<del>5.2</del>	<del>6.3</del>	<del>6.0</del>	<del>6.2</del>	<del>4.8</del>
25.0	10.0	7.0	0.0	12.0	15.0
					25.0

+1.1	+0.4	+0.5	-0.3	+0.6	-0.6	+0.4	+0.1
<del>2.7</del>	<del>3.4</del>	<del>3.3</del>	<del>3.1</del>	<del>3.5</del>	<del>3.2</del>	<del>4.4</del>	<del>5.4</del>
25.0	18.0	6.0	4.0	0.0	7.0	16.0	19.0
							25.0

+1.3	+0.2	-0.7	+0.7	-0.6	+0.3	+0.1
<del>1.5</del>	<del>2.6</del>	<del>3.8</del>	<del>2.8</del>	<del>2.1</del>	<del>3.4</del>	<del>2.5</del>
25.0	11.0	3.0	0.0	8.0	18.0	19.0
						25.0

+1.6	-0.2	-1.0	+0.5	-0.8	0.0	0.0
<del>5.4</del>	<del>7.2</del>	<del>8.0</del>	<del>7.0</del>	<del>6.5</del>	<del>7.8</del>	<del>7.0</del>
25.0	5.0	4.0	0.0	10.0	19.0	20.0
						25.0

Sta	+	HI	-	Elev
		1220.86		
T.P.	2.20	1222.84	5.22	1215.64
83			8.2	1214.6 ✓
84			7.3	1215.5 ✓
85			5.7	1217.1 ✓
86			4.3	1218.5 ✓
T.P.	6.06	1226.25	2.65	1220.19
87			6.6	1219.7 ✓
88			5.6	1220.7 ✓
89			4.8	1221.4 ✓
B.M #12			4.65	1221.60 <sup>2</sup>
90			3.8	1222.5 ✓

<del>6.2</del>	<del>7.8</del>	<del>8.2</del>	<del>8.2</del>	<del>7.9</del>	<del>8.6</del>	<del>7.9</del>	✓	
25.0	6.0	4.0	0.0	17.0	20.0	25.0		
<del>4.0</del>	<del>5.5</del>	<del>7.1</del>	<del>7.3</del>	<del>6.0</del>	<del>7.8</del>	<del>7.9</del>	✓	
25.0	7.0	5.0	0.0	9.0	20.0	25.0		
<del>4.7</del>	<del>7.0</del>	<del>5.7</del>	<del>5.7</del>	<del>5.2</del>	<del>6.8</del>	<del>5.6</del>	<del>5.4</del> ✓	
25.0	6.0	4.0	0.0	5.0	19.0	20.0	25.0	
<del>6.8</del>	<del>2.1</del>	<del>4.2</del>	<del>4.3</del>	<del>5.8</del>	<del>4.7</del>	<del>4.2</del>	✓	
25.0	10.0	6.0	0.0	9.0	17.0	25.0		
<del>3.8</del>	<del>7.8</del>	<del>6.6</del>	<del>6.6</del>	<del>6.2</del>	<del>7.2</del>	<del>6.8</del>	<del>6.7</del> ✓	
25.0	12.0	6.0	0.0	7.0	14.0	18.0	25.0	
<del>4.0</del>	<del>3.5</del>	<del>4.7</del>	<del>5.2</del>	<del>6.2</del>	<del>5.6</del>	<del>5.4</del>	<del>6.0</del> ✓	
25.0	19.0	15.0	10.0	8.0	0.0	8.0	15.0	25.0
<del>3.9</del>	<del>3.2</del>	<del>4.7</del>	<del>5.4</del>	<del>4.8</del>	<del>5.6</del>	<del>4.7</del>	<del>4.8</del> ✓	
25.0	19.0	12.0	10.0	0.0	18.0	21.0	25.0	
						1221.62		
2 Nails W. Root 24" Oak East Side Rd. 1N frt Mr. McGinn								
<del>3.8</del>	<del>2.1</del>	<del>4.6</del>	<del>3.8</del>	<del>5.2</del>	<del>4.6</del>	<del>4.1</del>	✓	
25.0	17.0	12.0	0.0	16.0	17.0	25.0		

Sta	+	HI	-	Elev
		1226.25		
91			3.6	1222.7 ✓
92			6.2	1220.1 ✗
T.P.	1.73	1221.59	6.39	1219.86

93			4.5	1217.1 ✓
94			5.6	1216.0 ✓
95			9.7	1211.9 ✗

T.P. 2.65 1211.68 12.56 1209.03

96			3.7	1208.0 ✓
97			6.0	1205.7 ✓
98			11.3	1200.4 ✓

T.P. 0.96 1200.37 12.27 1199.41

+0.4	+1.0	+0.4	-1.0	-0.1	-0.9	+0.4	
<del>3.2</del>	<del>2.6</del>	<del>3.2</del>	<del>4.6</del>	3.6	<del>3.7</del>	<del>4.5</del>	3.2 ✓
25.0	18.0	12.0	11.0	0.0	7.0	16.0	25.0
+1.3	+1.5	+0.5	-0.1	-0.7	+1.3	+1.4	
<del>4.8</del>	<del>4.7</del>	<del>5.4</del>	<del>6.2</del>	6.2	<del>6.4</del>	<del>4.4</del>	4.8 ✓
25.0	19.0	9.0	8.0	0.0	8.0	15.0	25.0

+1.3	+1.9	+1.1	0.0	-0.1	+1.2	+1.9	
<del>3.2</del>	<del>2.6</del>	<del>3.4</del>	<del>4.5</del>	4.5	<del>4.6</del>	<del>3.3</del>	2.6 ✓
25.0	16.0	12.0	10.0	0.0	13.0	17.0	25.0
-0.3	+0.3	-0.7		-0.9	+0.4	+0.5	
<del>5.2</del>	<del>5.2</del>	<del>6.2</del>	5.6	<del>6.5</del>	<del>5.2</del>	<del>5.1</del>	5.6 ✓
25.0	17.0	11.0	0.0	9.0	17.0	25.0	
+1.9	+1.1	-0.4		-0.7	+1.9	+2.6	
<del>4.8</del>	<del>8.6</del>	<del>10.1</del>	9.7	<del>10.4</del>	<del>7.8</del>	<del>7.1</del>	9.7 ✓
25.0	16.0	13.0	0.0	9.0	15.0	25.0	

+2.3	+2.3	+0.1	-0.7	-0.8	+1.8	+2.1	
<del>1.4</del>	<del>1.4</del>	<del>3.6</del>	<del>4.3</del>	3.7	<del>4.5</del>	<del>1.9</del>	1.6 ✓
25.0	20.0	15.0	11.0	0.0	10.0	20.0	25.0

+1.3	+0.9	-0.8	-0.2	+0.3	-0.6	-0.1	
<del>4.4</del>	<del>5.1</del>	<del>6.8</del>	<del>6.2</del>	6.0	<del>5.4</del>	<del>6.6</del>	6.1 ✓
25.0	17.0	12.0	9.0	0.0	9.0	15.0	25.0

+2.8	+2.2	-0.6		0.0	-1.1	+0.4	-0.1
<del>8.5</del>	<del>7.1</del>	<del>11.9</del>	11.3	<del>11.3</del>	<del>12.1</del>	<del>10.9</del>	11.4 ✓
25.0	19.0	9.0	0.0	12.0	13.0	19.0	25.0

Sta-	+	HI	-	Elev.
		1200.37		
99			6.6	1193.8 ✓
T.P.			12.81	1187.56
B.M. #13	1.90	1202.91		1201.01
T.P.	1.89	1194.34	10.43	1192.48
T.P.			6.80	1187.57
100			7.9	1186.5 ✓
T.P.	1.93	1184.00	12.30	1182.07
101			6.2	1177.8 ✓
T.P.	1.64	1172.91	12.73	1171.27
102			3.1	1169.8 ✓
103			10.3	1162.6 ✓
T.P.	0.80	1161.02	12.69	1160.22

+3.0	+2.8	-0.5	+0.1	-0.2	-0.9	+1.1	+1.1
<u>3.4</u>	<u>3.8</u>	<u>7.1</u>	<u>6.6</u>	<u>6.8</u>	<u>7.5</u>	<u>5.5</u>	<u>5.5</u> ✓
25.0	16.0	9.0	8.0	0.0	10.0	15.0	22.0
							25.0

Top Stone at Sta 100. N. Side Rl. Blue Kiel Mark.

3 Nails N. Root 36" Chesnut W. Side Rd.

Top Stone at Sta. 100 W Side Rd. Blue Kiel Mark.

+2.9	-0.3	+0.4	-0.2	-0.7	+1.3	+1.3
<u>5.2</u>	<u>8.2</u>	<u>7.5</u>	<u>7.9</u>	<u>8.1</u>	<u>8.6</u>	<u>6.6</u>
25.0	12.0	3.0	0.0	10.0	13.0	21.0
						25.0

+2.8	+2.2	-0.2	+0.6	+0.2	-0.8	-0.4	+0.3
<u>3.4</u>	<u>4.6</u>	<u>6.4</u>	<u>5.6</u>	<u>6.2</u>	<u>6.0</u>	<u>7.0</u>	<u>6.9</u>
25.0	14.0	12.0	11.0	0.0	9.0	12.0	20.0
							25.0

+2.1	-0.8	+0.3	-0.2	-1.4	-0.6	-0.2
<u>1.0</u>	<u>3.9</u>	<u>2.8</u>	<u>3.1</u>	<u>3.3</u>	<u>4.5</u>	<u>3.4</u>
25.0	12.0	9.0	0.0	7.0	11.0	18.0
						25.0

+1.8	+1.1	-1.0	-0.1	-0.5	-1.5	+0.4
<u>8.5</u>	<u>9.2</u>	<u>11.3</u>	<u>10.4</u>	<u>10.3</u>	<u>10.8</u>	<u>11.8</u>
25.0	19.0	14.0	10.0	0.0	9.0	14.0
						25.0

Sta.	+	HI	-	Elev.
		1161.02		
104			5.9	1155.2 ✓
T.P.	3.25	1151.92	12.35	1149.64

105			3.9	1149.0 ✓
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106			12.4	1139.5 ✓
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T.P.	3.15	1142.82	12.25	1139.64
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107			12.6	1130.2 ✓
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B.M.#14			4.65	1138.14
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T.P.	0.81	1131.13	12.50	1130.32
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108			6.5	1124.6 ✓ Drive 10'
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109			11.9	1119.2 ✓
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T.P.	2.11	1120.33	12.91	1118.22
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110			5.4	1114.9 ✓
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+1.9	+1.7	-0.4		0.0	-1.2	+0.9	+0.9
<del>4.6</del>	<del>4.2</del>	<del>6.3</del>	5.9	5.9	7.1	5.0	5.0
25.0	18.0	15.0	0.0	8.0	18.0	20.0	25.0

+3.3	+2.3	-0.3	0.0		0.0	-0.8	-0.1	+2.1
<del>0.6</del>	<del>1.6</del>	<del>4.2</del>	<del>3.9</del>	3.9	3.9	4.7	4.0	1.8
25.0	21.0	16.0	12.0	0.0	7.0	9.0	18.0	25.0

+2.8	+0.8	-0.8	+0.2		+0.4	-0.3	0.0	+0.6	-0.6
<del>9.6</del>	<del>11.6</del>	<del>13.2</del>	<del>12.2</del>	12.4	12.0	12.7	12.4	11.8	13.0
25.0	19.0	16.0	12.0	0.0	6.0	8.0	18.0	22.0	25.0

+0.7	+0.7	-0.5	-0.1		0.0	-1.4	-0.8	-0.1	+0.9
<del>11.9</del>	<del>11.9</del>	<del>13.1</del>	<del>12.7</del>	12.6	12.6	14.0	13.4	12.7	11.7
25.0	19.0	15.0	12.0	0.0	5.0	10.0	11.0	19.0	25.0

3 Nails Top 4" Stump (Chestnut) on East Side Rd. <sup>1138.12</sup>

+0.2	+0.5	+0.7		0.0	-0.9	+1.5	+1.5
<del>6.3</del>	<del>6.0</del>	<del>5.8</del>	6.5	6.5	7.4	5.0	5.0
35.0	25.0	16.0	0.0	9.0	12.0	22.0	25.0

+2.1	-1.1	-0.3		0.0	-0.9	+2.6	+2.7
<del>9.8</del>	<del>13.0</del>	<del>12.2</del>	11.9	11.9	12.8	9.3	9.2
25.0	14.0	13.0	0.0	7.0	9.0	18.0	25.0

+1.5	-0.3	-1.5	-0.1		-0.1	-1.0	+2.8	+3.7
<del>3.9</del>	<del>5.7</del>	<del>6.8</del>	<del>5.5</del>	5.4	5.5	6.4	2.6	1.7
25.0	21.0	17.0	13.0	0.0	8.0	8.0	16.0	25.0

Sta. + HI - Elev

111 1120.33 9.1 1111.2 ✓

T.P. 1.35 1110.64 11.04 1109.29

112 2.4 1108.2 ✓

113 4.1 1106.5 W ✓

114 4.9 1105.7 W ✓

114+87 4.4 1106.2 ✓ Bridge

115 4.5 1106.1 W ✓

B.M. #15 6.59 1112.73 4.42 ~~1106.22~~ 1106.14

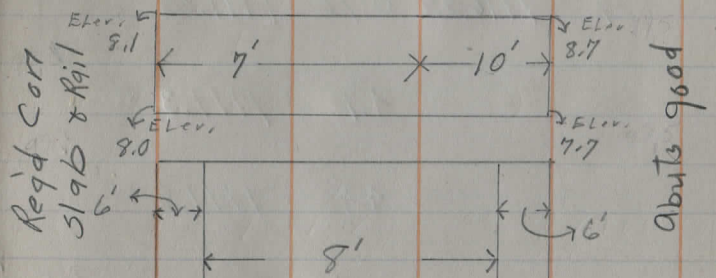
±

+0.2 -0.5 -1.5 -0.3 -0.1 -0.9 +1.3 +1.8  
9.9 9.6 10.1 9.4 9.1 9.2 10.0 9.8 7.3 ✓  
25.0 16.0 15.0 10.0 0.0 9.0 9.0 17.0 25.0

0.0 +0.3 -0.4 -0.4 +0.3 -0.4  
~~2.4~~ 2.1 2.8 2.4 2.8 2.1 2.8 ✓  
25.0 19.0 12.0 0.0 9.0 9.0 25.0

-0.8 0.0 -0.3 -0.3 +0.7 -0.5  
7.9 4.1 4.4 4.1 4.4 3.4 4.6 ✓  
25.0 12.0 11.0 0.0 7.0 9.0 25.0

-1.1 -1.0 +0.1 -0.7 -0.1 -0.6 +0.4 -0.1  
6.0 5.9 4.8 5.6 5.8 4.9 5.5 4.5 5.6 ✓  
25.0 19.0 15.0 12.0 11.0 0.0 9.0 10.0 25.0



-1.9 -2.8 -2.9 -0.2 -0.2 -3.4 -1.6 -3.6 -3.2  
6.4 7.3 7.4 7.7 4.5 4.7 7.9 6.1 8.1 7.7 ✓  
25.0 16.0 10.0 6.0 0.0 7.0 13.0 17.0 22.0 25.0

x S.W. cor. South Abutment Stone & Wood Culvert 1106.14

Sta.	+	Ht	-	Elev
		1112.73		
116			7.8	1104.9 ✓

117			7.4	1105.3 ✓
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118			6.8	1105.9 ✓
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119			6.1	1106.6 ✓
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120			3.3	1109.4 ✓
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T.P.	4.39	1116.22	0.90	1111.83
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121			4.9	1111.3 ✓
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122			4.4	1111.8 ✓
-----	--	--	-----	----------

122	47.40		5.0	1111.2 ✓ Int. Po. Run Rd.
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B.M #15	4.18	1116.25	4.18	1112.07 +112.04
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123			4.8	1111.5 ✓
-----	--	--	-----	----------

-0.9	-1.3	-2.1	-0.3	-0.4	-1.7	-0.1	-2.1	-1.0
<del>8.7</del>	<del>8.1</del>	<del>8.8</del>	<del>8.1</del>	7.8	8.2	9.5	7.9	<del>7.9</del>
25.0	13.0	12.0	8.0	0.0	5.0	9.0	16.0	21.0

-1.2	-1.0	-1.7	-0.2	-0.4	-1.4	-0.8	-0.6	-2.3
<del>8.6</del>	<del>8.4</del>	<del>8.1</del>	<del>7.6</del>	7.4	7.8	8.8	8.2	<del>8.8</del>
25.0	14.0	13.0	9.0	0.0	4.0	7.0	8.0	17.0

-1.2	-0.8	-1.4	-0.1	-1.2	-0.7	-1.6		
<del>8.8</del>	<del>7.6</del>	<del>8.2</del>	<del>6.9</del>	6.8	8.0	7.5	8.4	✓
25.0	20.0	14.0	9.0	0.0	8.0	9.0	25.0	

+2.2	+0.3	-1.1	-0.2	-0.3	-1.0	+0.9	+0.8	+1.4
<del>3.9</del>	<del>5.8</del>	<del>7.2</del>	<del>6.3</del>	6.1	6.4	7.1	5.2	<del>5.3</del>
25.0	16.0	14.0	10.0	0.0	5.0	9.0	13.0	21.0

+2.1	+1.4	-1.0	+0.6	-0.3	-1.4	+1.8	+1.7	
<del>1.8</del>	<del>7.9</del>	<del>7.3</del>	<del>2.7</del>	3.3	8.6	7.7	7.5	7.6
25.0	21.0	16.0	13.0	0.0	9.0	12.0	18.0	25.0

+1.5	+1.5	-1.4	+0.1	-0.3	-1.4	-0.6	+1.6	+1.9
<del>3.9</del>	<del>3.4</del>	<del>6.6</del>	<del>7.8</del>	4.9	5.2	6.3	5.5	<del>3.3</del>
25.0	22.0	16.0	12.0	0.0	8.0	10.0	16.0	20.0

-0.4	-1.0	-0.3	+0.1	-1.2	-0.3			
<del>4.8</del>	<del>5.4</del>	<del>7.7</del>	<del>4.4</del>	4.3	5.6	4.7		
25.0	18.0	17.0	0.0	6.0	25.0	35.0		

6.3	5.4	5.0		
100.0	50.0	0.0		

1 Nail S. Root 40" Elm in field North Side Rd. at turn 1112.07

-0.3	-0.7	-1.5	-0.6	-0.5	-1.1	-0.2	+0.6
<del>5.1</del>	<del>5.5</del>	<del>6.3</del>	<del>5.4</del>	4.8	5.3	5.4	5.0
25.0	17.0	15.0	12.0	0.0	14.0	16.0	25.0

Sta	+	HI	-	Elev.
		1116.25		
124			4.7	1111.6 ✓
125			4.2	1112.1 ✓
126			2.9	1113.4 ✓
126+50			2.3	1114.0 ✓
127			2.3	1114.0 ✓
T.P.	1.56	1115.24	2.54	1113.71

128			2.4	1112.9 ✓
129			3.1	1112.2 ✓
130			2.9	1112.4 ✓
131			2.4	1112.9 ✓
131+12.75			2.2	1113.1 ✓ Int. Parkman Rd.

+ 8" sec Iron one end broken  
Locate to line with Parkman Rd  
ditches

<del>5.2</del>	<del>5.3</del>	<del>5.6</del>	<del>5.8</del>	4.7	<del>4.8</del>	<del>5.4</del>	<del>4.2</del>	✓	
25.0	16.0	15.0	11.0	0.0	6.0	9.0	25.0		
<del>4.2</del>	<del>4.4</del>	<del>5.2</del>	<del>4.5</del>	4.2	<del>4.6</del>	<del>5.2</del>	<del>4.6</del>	+0.8 3.4 ✓	
25.0	14.0	13.0	10.0	0.0	6.0	9.0	13.0	25.0	
<del>3.6</del>	<del>3.8</del>	<del>4.1</del>	<del>3.2</del>	2.9	<del>3.8</del>	<del>4.4</del>	<del>4.6</del>	✓	
25.0	14.0	12.0	9.0	0.0	10.0	15.0	25.0		
<del>2.1</del>	<del>3.0</del>	<del>3.1</del>	<del>3.6</del>	<del>2.8</del>	2.3	<del>2.5</del>	<del>2.2</del>	<del>1.8</del>	+1.1 1.2 ✓
25.0	18.0	12.0	11.0	8.0	0.0	8.0	12.0	19.0	25.0
<del>1.8</del>	<del>2.6</del>	<del>3.8</del>	<del>2.6</del>	2.3	<del>2.8</del>	<del>3.4</del>	<del>2.2</del>	+0.2 2.1 ✓	
25.0	14.0	13.0	10.0	0.0	8.0	10.0	14.0	25.0	

<del>2.5</del>	<del>2.7</del>	<del>3.7</del>	<del>2.8</del>	2.4	<del>3.6</del>	<del>3.5</del>	<del>2.6</del>	✓	
25.0	12.0	11.0	9.0	0.0	7.0	10.0	25.0		
<del>3.6</del>	<del>3.6</del>	<del>4.4</del>	<del>3.5</del>	3.1	<del>4.0</del>	<del>2.8</del>		✓	
25.0	14.0	12.0	8.0	0.0	10.0	25.0			
<del>4.4</del>	<del>3.8</del>	<del>4.8</del>	<del>3.2</del>	2.9	<del>3.6</del>	<del>4.5</del>	<del>3.5</del>	<del>3.7</del>	✓
25.0	14.0	12.0	8.0	0.0	7.0	10.0	11.0	25.0	
<del>2.8</del>	<del>3.0</del>	<del>3.4</del>		2.4	<del>3.6</del>	<del>2.9</del>	<del>2.2</del>	✓	
25.0	13.0	12.0	0.0	9.0	10.0	25.0			

1.5  
50.0 1.1  
100.0

Req'd 12"

Sta.	+	H.I	-	Elev.
		1115.27		
132			2.5	1112.8 ✓
133			2.2	1113.1 ✓
B.M. #17	6.14	1120.96	0.46	<del>1114.82</del> 1114.81
134			8.4	1112.6 ✓
135			6.7	1114.3 ✓
136			5.5	1115.5 ✓
137			6.7	1114.3 ✓
138			8.8	1112.2 ✓
139			8.6	1112.4 ✓
140			8.4	1112.6 ✓
T.P.	2.38	1116.88	6.46	1114.50

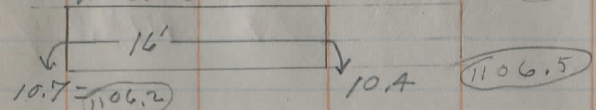
-0.4 -0.6	0.0 +1.0	
<del>2.9</del> <del>3.1</del>	<del>2.5</del> <del>2.5</del> <del>1.5</del>	✓
25.0	4.0 0.0 12.0 25.0	
-0.7 -0.9 -0.9	+0.1 -1.0 -0.4 +0.1	✓
<del>2.9</del> <del>3.1</del> <del>3.1</del>	<del>2.2</del> <del>2.1</del> <del>3.2</del> <del>2.6</del> <del>2.1</del>	✓
25.0	12.0 3.0 0.0 11.0 15.0 14.0 25.0	
1114.82		
3 Nails N. Root 24" Hickory N. turn on S. Side Rd.		
-0.9 +0.3	+0.6 +0.3 +1.3	✓
<del>9.3</del> <del>8.1</del> <del>8.4</del>	<del>7.8</del> <del>8.1</del> <del>7.1</del>	✓
25.0	2.0 0.0 8.0 15.0 25.0	
-1.0 0.0	+0.2 +0.1 +0.7 +2.3	✓
<del>7.7</del> <del>6.7</del> <del>6.7</del>	<del>6.5</del> <del>6.6</del> <del>6.0</del> <del>4.4</del>	✓
25.0	12.0 0.0 7.0 14.0 15.0 25.0	
-2.0	0.0 +0.9 +1.0 +0.7 +1.1 +1.2	✓
<del>7.5</del>	<del>5.5</del> <del>5.5</del> <del>4.6</del> <del>4.5</del> <del>4.8</del> <del>4.4</del> <del>4.3</del>	✓
25.0	0.0 5.0 12.0 16.0 17.0 25.0	
-1.3 -1.2	-0.1 +0.5 +1.6	✓
<del>8.0</del> <del>7.9</del> <del>6.7</del>	<del>6.5</del> <del>6.2</del> <del>5.1</del>	✓
25.0	16.0 0.0 15.0 17.0 25.0	
-0.2 -0.3	+0.7 +0.5	✓
<del>9.0</del> <del>7.1</del> <del>8.8</del>	<del>8.1</del> <del>8.3</del>	✓
25.0	10.0 0.0 9.0 25.0	
-0.3 -0.8 +0.2	+0.3 -0.3 +0.2 +0.6	✓
<del>7.9</del> <del>7.4</del> <del>8.4</del>	<del>8.6</del> <del>8.3</del> <del>8.7</del> <del>8.4</del> <del>8.0</del>	✓
25.0	13.0 5.0 0.0 9.0 12.0 15.0 25.0	
0.0 +0.6 -0.2	-0.6 -0.3 +1.2 +1.6	✓
<del>8.4</del> <del>7.9</del> <del>8.6</del>	<del>8.4</del> <del>7.8</del> <del>8.7</del> <del>7.2</del> <del>6.8</del>	✓
25.0	12.0 11.0 0.0 4.0 11.0 15.0 25.0	

Sta.	+	HI	-	Elev.	
		1116.88			
141			6.4	1110.5	✓
141+70					✗
142			8.0	1108.9	✓
143			7.5	1109.4	✓
144			6.2	1110.7	✓
B.M. #18		4.42		1112.46	
145			5.4	1111.5	✓
146			4.3	1112.6	✓
147			3.7	1113.2	✓
148			3.7	1113.2	✓
149			4.0	1112.9	✓

Revd. B.V.P.

+2.0	+2.1	+0.2		+2.4	+3.1	
<del>4.4</del>	<del>4.2</del>	<del>5.2</del>	6.4	<del>4.0</del>	<del>5.3</del>	✓
25.0	17.0	13.0	0.0	10.0	25.0	

Wooden Culvert 12" x 15"



-1.1	-0.9	+0.3	-0.4	-1.4	-1.3	-0.4
<del>4.1</del>	<del>8.9</del>	<del>7.7</del>	<del>8.4</del>	8.0	9.4	7.3
25.0	16.0	13.0	10.0	0.0	4.0	20.0

+1.5	+1.5	-0.6		-0.1	-1.3	+1.3	+0.9
<del>6.0</del>	<del>6.2</del>	<del>8.1</del>	7.5	7.6	8.8	<del>6.2</del>	<del>6.6</del>
25.0	19.0	12.0	0.0	5.0	9.0	15.0	25.0

-0.6	-0.8	-0.3		-0.8	-1.8	
<del>6.8</del>	<del>7.0</del>	<del>6.5</del>	6.2	7.2	8.0	✓
25.0	8.0	6.0	0.0	15.0	25.0	

3 Nails S.E. Root 16" Maple W. Side Rd. 1112.46

+1.0	-1.0	-0.2		0.0	-0.7	+0.9	+0.9
<del>4.4</del>	<del>6.4</del>	<del>5.6</del>	5.4	5.4	6.1	4.5	<del>4.5</del>
25.0	12.0	9.0	0.0	7.0	13.0	21.0	25.0

-0.1	-0.1	-1.1	-0.3	-0.1	-0.4	+0.3	0.0
<del>4.4</del>	<del>4.4</del>	<del>5.4</del>	4.6	4.3	4.4	4.7	4.0
25.0	16.0	12.0	9.0	0.0	7.0	14.0	16.0

-0.6	-0.5		-0.6	-0.1	-0.7	-0.1	-0.1
<del>4.2</del>	<del>4.2</del>	3.7	4.3	3.8	4.4	3.8	3.8
25.0	10.0	0.0	4.0	6.0	15.0	18.0	25.0

-0.5	-0.5	-0.7		-0.7	0.0	-0.9	+0.2	+0.2
<del>4.2</del>	<del>4.2</del>	4.4	3.7	4.4	3.7	4.6	3.5	3.5
25.0	21.0	11.0	0.0	7.0	8.0	18.0	21.0	25.0

+0.4	0.0	-0.5		-0.1	+0.2	-0.4	
<del>3.6</del>	<del>4.0</del>	<del>4.5</del>	4.0	4.1	3.8	4.4	✓
25.0	20.0	9.0	0.0	16.0	19.0	25.0	

Sta.	+	HI	-	Elev
		1116.88		
T.P	2.36	1115.68	3.56	1113.32

150			2.9	1112.8 ✓
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150+53.64			3.0	1112.7 ✓
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151			3.4	1112.3 ✓
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BM #19	1.36	1115.64	1.36	<del>1114.32</del> 1114.28
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150+66			3.4	1112.2 ✓ Drive 12'
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152			4.2	1111.4 ✓
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153			7.5	1108.1 ✓
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153+95			10.5	1104.8 ✓
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154			11.0	1104.6 ✓
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+1.6	+0.3	+0.1	+0.9	
<u>1.3</u>	<u>2.9</u>	<u>2.6</u>	<u>2.8</u>	<u>2.0</u>
25.0	0.0	12.0	21.0	25.0

+1.6	+1.6	+1.2	+0.3	+0.2
<u>1.4</u>	<u>1.4</u>	<u>1.8</u>	<u>3.0</u>	<u>2.7</u>
25.0	14.0	4.0	0.0	16.0

+1.4	+1.4	+1.0	0.0	+0.7
<u>2.0</u>	<u>2.0</u>	<u>2.4</u>	<u>3.4</u>	<u>3.4</u>
25.0	16.0	4.0	0.0	18.0

1114.28  
3 Nachs N.E. Sect 16" Map on So. Side Road L Sta. 151

+1.4	+1.3	+0.9	+0.3	+0.2	+0.2
<u>2.0</u>	<u>2.1</u>	<u>2.5</u>	<u>3.4</u>	<u>3.1</u>	<u>3.2</u>
25.0	16.0	4.0	0.0	25.0	30.0

+1.3	+1.8	+2.0	-0.1	-0.5	+0.7
<u>2.4</u>	<u>2.1</u>	<u>2.2</u>	<u>4.2</u>	<u>4.3</u>	<u>4.7</u>
25.0	18.0	5.0	0.0	9.0	18.0

+2.1	+2.4	+2.0	0.0	-0.5	+1.7
<u>5.4</u>	<u>5.1</u>	<u>5.5</u>	<u>7.5</u>	<u>7.5</u>	<u>5.8</u>
25.0	19.0	10.0	5.0	0.0	15.0

+2.6	+2.6	-0.1	+0.2	-0.7	+0.3	+0.8
<u>7.2</u>	<u>8.2</u>	<u>10.8</u>	<u>10.8</u>	<u>10.6</u>	<u>11.5</u>	<u>10.5</u>
25.0	13.0	10.0	0.0	10.0	14.0	19.0

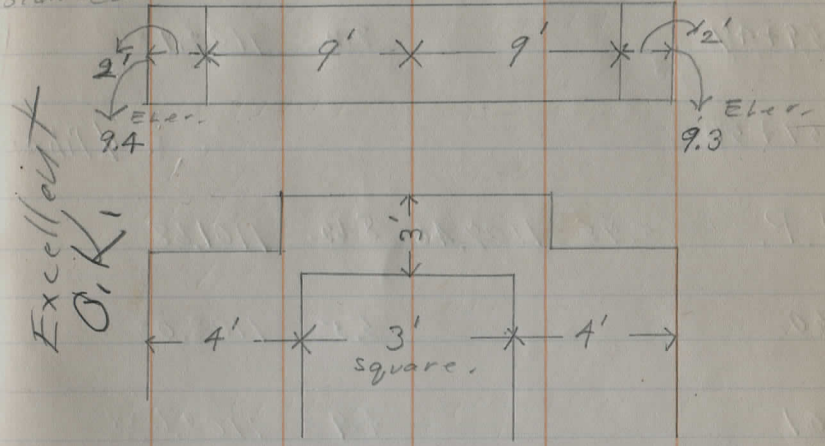
-0.4	-1.1	-0.4	-1.1	-1.4
<u>11.4</u>	<u>12.1</u>	<u>11.0</u>	<u>11.4</u>	<u>12.1</u>
25.0	18.0	0.0	9.0	12.0

Sta.	+	HI	-	Elev.
B.M. #20	3.98	1110.30	9.32	1106.32
154+70			5.4	1104.9 ✓

Bridge

155			6.3	1104.0 ✓✓
155+60			6.2	1104.1 ✓
156			6.2	1104.1 ✓
157			5.2	1105.1 ✓
158			6.3	1104.0 ✓

Non N.E. cor. E. Parapet Stone Culvert 1106.32  
Stone Culvert.

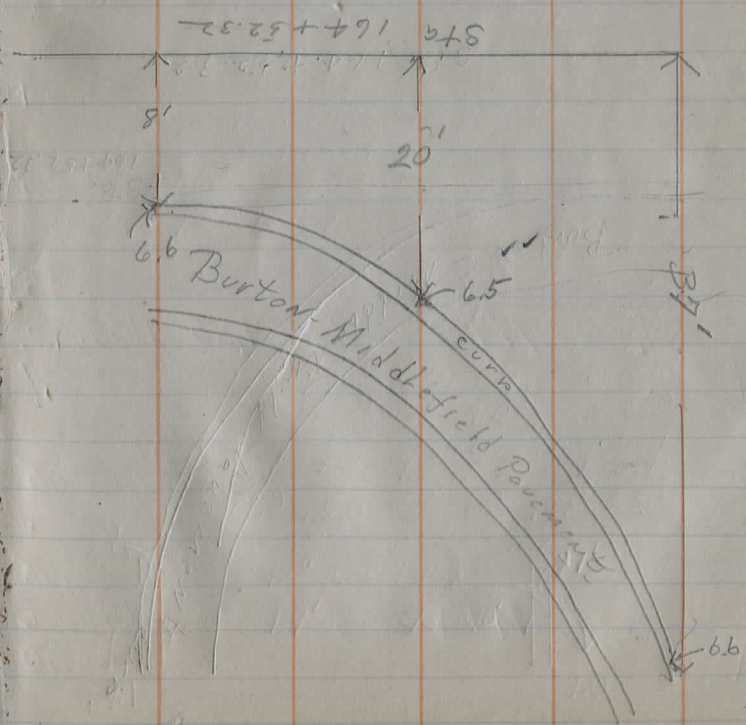


-1.1	-1.0	-0.1		-0.4	-0.9	+0.7	+1.2	
<del>4.4</del>	<del>4.2</del>	<del>6.4</del>	6.3	<del>6.7</del>	<del>7.2</del>	<del>5.6</del>	<del>5.1</del>	✓
25.0	10.0	8.0	0.0	7.0	11.0	14.0	25.0	
-1.3	-1.2	-0.3		-0.3	-1.0	-0.8		
<del>4.5</del>	<del>4.4</del>	<del>6.5</del>	6.2	<del>6.5</del>	<del>4.2</del>	<del>7.0</del>		✓
25.0	10.0	7.0	0.0	7.0	8.0	25.0		
+3.4	+3.2	-0.1		0.0	-0.5	+3.5	+4.1	
<del>2.8</del>	<del>3.2</del>	<del>5.3</del>	6.2	<del>6.2</del>	<del>6.4</del>	<del>2.7</del>	<del>2.1</del>	✓
25.0	7.0	3.0	0.0	15.0	18.0	25.0	30.0	
+0.6	+0.8	-0.5		+0.4	-0.2	+0.8	+0.8	
<del>4.6</del>	<del>4.4</del>	<del>5.7</del>	5.2	<del>4.8</del>	<del>5.1</del>	<del>4.4</del>	<del>4.4</del>	✓
25.0	8.0	5.0	0.0	9.0	19.0	22.0	25.0	
+0.6	+0.2	-0.7		-0.5	+0.5			
<del>5.4</del>	<del>6.1</del>	<del>6.7</del>	6.3	<del>6.8</del>	<del>5.8</del>			✓
25.0	9.0	6.0	0.0	17.0	25.0			



Sta	+	HI	-	Elev.
		1107.46	6.63	1100.83
B.M	6.63	1107.50	6.63	<del>1100.83</del>
164+52.32			7.4	1100.1

7.11 East Curb Paved Rd. opp. Fence line. 1100.87					
+0.7		-0.7	-1.1	+0.2	+1.5
<u>6.7</u>	7.4	<u>8.1</u>	<u>9.2</u>	<u>7.2</u>	<u>5.7</u>
35.0	00	21.0	22.0	25.0	35.0



13 Rain 8-28-'20  
 mud  
 Harry  
 Thompson on  
 Helder man

SLOPE  
 STAKES

Stakes are set out 1ft. from  
 point of slope.

#  
 B.M20 0.65 1106 97 1106.32

164 00.85 6.12

163 01.45 5.52

162 02.05 4.92

141 02.65 4.32

160 03.25 3.72

+50 03.54 3.43

159 03.85 3.12

158 04.45 2.52

T.P. 4.90 1110 52 1.35 1105.62

157 04.97 5.55

154 05.35 5.17

155 05.65 4.87

T.P. 7.71 1114 03 1106.32

154 06.30 7.73

Rd.

Stake	Reading	Ground	Grd. Stk.
F1.4	$\frac{F1.5}{15.4}$	$\frac{F0.6}{16.9}$	F0.2
F1.3	$\frac{F1.6}{15.4}$	$\frac{C0.3}{19.2}$	C0.6
F1.4	$\frac{F1.8}{15.7}$	$\frac{C1.1}{19.4}$	C1.3
F1.0	$\frac{F0.9}{16.4}$	$\frac{C1.4}{19.7}$	C1.5
F1.9	$\frac{F1.7}{15.2}$	$\frac{C0}{17.8}$	C0.3
F2.5	$\frac{F2.1}{14.6}$	$\frac{F0.5}{17.0}$	F0.4
F1.3	$\frac{F1.6}{15.4}$	$\frac{F1.6}{15.4}$	F1.3
C0.3	$\frac{F0.1}{17.6}$	$\frac{F1.7}{15.3}$	F1.5
C0.8	$\frac{C0.8}{19.0}$	$\frac{F0.7}{16.7}$	F0.5
C2.1	$\frac{C2.1}{20.9}$	$\frac{F1.7}{15.2}$	F1.7
F2.4	$\frac{F2.5}{14.2}$	$\frac{F0.6}{16.9}$	F0.5
F2.5	$\frac{F2.7}{14.4}$	$\frac{F2.9}{14.8}$	F2.7

MARKED

1114 03

153

09,45 4,58

$\frac{C1,0}{19,2}$

$\frac{F1,5}{15,5} \text{ (0,0)}$

152

12,74 4,29

$\frac{C0,4}{18,5}$

$\frac{F1,8}{15,1} \text{ (F1,8)}$

4,40 1117 52

0,91 1113,12

151

13,15 4,37

$\frac{C0,6}{18,5}$

$\frac{F1,0}{10,3} \text{ (F1,0)}$

+59,7

3,22 N 1114,30

13,23 4,29

$\frac{C1,3}{19,6}$

$\frac{F0,3}{17,3} \text{ (F0,2)}$

150

13,35 4,17

$\frac{C0,8}{19,0}$

$\frac{F0,4}{17,2} \text{ (F0,3)}$

S.F. 3,84 1118,14

1114,30

8-30 -20

T.P. 3,90 1118 09

3,95 1114,19

149

13,55 4,54

$\frac{F0,4}{16,7}$

$\frac{F1,0}{16,3} \text{ (F0,7)}$

148

13,75 4,34

$\frac{F1,0}{16,1}$

$\frac{F1,5}{15,5} \text{ (F1,3)}$

147

13,82 4,27

$\frac{F1,2}{15,8}$

$\frac{F1,2}{16,0} \text{ (F0,7)}$

T.P. 3,84 1116 46

5,47 1112,62

146

13,15 3,31

$\frac{F0,2}{17,2}$

$\frac{F0,2}{17,5} \text{ (0,0)}$

145

12,35 4,11

$\frac{F0,1}{17,3}$

$\frac{F0,3}{17,3} \text{ (F0,1)}$

4,00 1112,46

144

11,55 4,91

$\frac{F1,1}{15,7}$

$\frac{F1,7}{15,2} \text{ (F1,4)}$

T.P. 3,29 1113 74

6,01 1110,45

143

10,75 2,99

$\frac{C0,5}{18,2}$

$\frac{0,0}{17,0} \text{ (0,0)}$

1113 74

142

T.P. 8.37 1118 21

141

140

139

T.P. 7.96 1120 22

138

137

136

135

134

B.M. 5.70 1117 70

133

132 <sup>no</sup> <sub>8-31</sub> <sup>width</sup>

B.M. 1.90 1116 72

131

10.40

390 1129.21

10.95

11.95

12.95

5.95 1112.26

13.95

14.95

15.72

15.08

14.21

550 1114.72

8.22 1112.00

13.48

13.04

1114.82

12.82

3.34

F2.2

F1.8 / 15.0

7.26

C1.7

C1.7 / 20.3

6.26

C0.6

C0.7 / 18.8

5.26

F0.7

F0.8 / 16.6

4.27

F1.9

F2.0 / 14.8

5.27

F1.7

F1.8 / 15.1

4.50

F1.5

F1.8 / 15.1

5.14

F1.3

F1.7 / 15.7

6.01

F2.2

F2.7 / 14.5

ck 114.82 = 960

4.22

F1.1

F1.2 / 16.0

4.66

F0.3

F0.6 / 16.9

3.90

☹️

F0.2 / 17.5

F2.8 / 14.6

F2.4

C2.6 / 21.6

C2.7

C2.0 / 20.8

C2.1

F0.5 / 17.0

F0.3

F1.4 / 15.7

F1.3

F0.6 / 16.9

0.0

C0.7 / 18.8

C0.8

C0.2 / 18.1

C0.3

F1.1 / 16.1

F1.2

F1.3 / 15.4

F0.9

F0.4 / 17.2

C0.2

F0.3 / 17.3

☹️

1116 72

130			13.08	3.64	$\boxed{F1.7}$	$\frac{F1.8}{15.1}$	$\frac{F1.5}{15.5}$	$\boxed{F1.3}$
129			13.42	3.30	$\boxed{F1.9}$	$\frac{F1.9}{14.9}$	$\frac{F1.6}{15.4}$	$\boxed{F1.4}$
128			13.76	2.96	$\boxed{F1.0}$	$\frac{F1.3}{15.8}$	$\frac{F1.1}{16.1}$	$\boxed{F0.7}$
T.P.	4.67	1117 43	3.96	1112.76				
127			14.00	3.43	$\textcircled{0.0}$	$\frac{F0.5}{17.0}$	$\frac{0.0}{17.8}$	$\textcircled{0.0}$
126			13.70	3.73	$\textcircled{0.0}$	$\frac{F0.7}{16.7}$	$\frac{C1.0}{19.3}$	$\boxed{C1.0}$
125			13.30	4.13	$\boxed{F1.1}$	$\frac{F1.6}{15.5}$	$\frac{F1.3}{15.9}$	$\boxed{F1.0}$
124			12.90	4.53	$\textcircled{F1.5}$	$\frac{F2.1}{14.6}$	$\frac{F1.2}{15.4}$	$\textcircled{F1.4}$
123			12.50	4.93	$\textcircled{F1.7}$	$\frac{F2.1}{14.6}$	$\frac{F1.8}{15.1}$	$\boxed{F1.8}$
B.M.			5.32	1112.11				
	4.61	1116.68		1112.07				
122			12.10	4.58	$\boxed{F1.0}$	$\frac{F0.7}{16.7}$	$\frac{F1.4}{14.1}$	$\boxed{F1.2}$
121			11.32	5.36	$\textcircled{F1.3}$	$\frac{F1.4}{15.7}$	$\frac{C1.6}{20.1}$	$\boxed{C1.8}$
T.P.	2.77	1113 17	6.28	1110.40				
120			09.80	3.37	$\textcircled{F0.9}$	$\frac{F1.1}{16.1}$	$\frac{C1.4}{19.9}$	$\boxed{C1.3}$
119			07.90	5.27	$\textcircled{F1.2}$	$\frac{F0.7}{14.5}$	$\frac{F0.1}{17.5}$	$\boxed{F0.3}$

118		1113 17	6,69	06.48	6,69	(F1,3)	$\frac{F1,5}{15,5}$	$\frac{F1,8}{15,1}$	(F1,6)
117				06.00	7,17	(F1,7)	$\frac{F1,7}{15,2}$	$\frac{F1,3}{15,8}$	(F1,3)
T.P.	4,08	1109,51	774	1105.43					
116				06.00	3,51	[F2,0]	$\frac{F2,3}{15,9}$ special ditch	$\frac{F1,4}{17,1}$	(F1,8)
115				06,14	3,37	(F2,7)	$\frac{F3,0}{15,0}$	$\frac{F2,6}{14,2}$	[F2,0]
114				07,16	2,35	(F1,8)	$\frac{F1,4}{15,6}$	$\frac{F1,6}{15,4}$	[F1,5]
B.M.			3,37	1106.14					
113				08.33	1,18	[F2,0]	$\frac{F2,1}{14,6}$	$\frac{F1,6}{15,4}$	(F1,7)
B.M.	8.80	1124 94		1106.14					
112				10.01	4,93	(F1,7)	$\frac{F1,9}{14,9}$	$\frac{F1,2}{14,9}$	[F1,7]
111				12.70	2,24	[F2,2]	$\frac{F2,9}{14,2}$	$\frac{0,0}{17,8}$	(0,0)
T.P.	11,96	1126 38	0,52	1124.42					
110				16.30	10,08	[F1,6]	$\frac{F2,7}{14,6}$	$\frac{0,1}{2,98}$	[C2,2]
109				20.70	5,68	[F1,8]	$\frac{F1,9}{14,9}$	$\frac{0,4,2}{19,6}$	[C1,7]
108				26.05	00,33		Drive	$\frac{F1,8}{15,1}$	[F1,0]
T.P.	11,56	1137 56	0,38	1126,00					
107				32.50	5,06	(F2,5)	$\frac{F2,6}{14,2}$	$\frac{F2,9}{14,8}$	(F2,7)
T.P.	10,96	1148 30	0,22	1137,34					

114830

106

39.50

8.80

$\boxed{0.0}$

$\frac{F0.5}{15.0}$

2.17 slope

$\frac{0.0}{15.5}$

$\boxed{C0.9}$

B.M.

1017 1138.13

105

46.50

1.80

$\frac{0.2}{16.7}$

$\boxed{C1.4}$

T.P.

1138 1159 11

0.57 1147.73

105

46.50

12.61

$\boxed{C3.9}$

$\frac{C3.3}{18.8}$

104

53.50

5.61

$\boxed{C2.7}$

$\frac{C2.2}{19.7}$

$\frac{C0.8}{16.3}$

$\boxed{C1.0}$

T.P.

1203 1170 13

101 1158.10

103

9-8-20

60.50

9.63

$\boxed{C3.7}$

$\frac{C3.7}{19.2}$

$\frac{C0.9}{16.4}$

$\boxed{C1.2}$

T.P.

946 1179 32

0.27 1169.86

102

67.50

11.82

$\boxed{C4.2}$

$\frac{C3.9}{19.4}$

$\frac{C1.7}{17.2}$

$\boxed{C1.7}$

101

74.50

4.82

$\frac{C2.8}{18.3}$

$\boxed{C3.4}$

T.P.

1095 1190 27

0.00 1179.32

101

74.50

15.77

$\boxed{C5.9}$

$\frac{C5.8}{21.3}$

100

81.50

8.77

$\boxed{C8.1}$

$\frac{C8.0}{23.5}$

$\frac{C6.3}{21.8}$

$\boxed{C6.5}$

T.P.

916 1197 83

1.60 1188.67

99

88.50

9.33

$\boxed{C8.4}$

$\frac{C8.3}{23.8}$

$\frac{C6.4}{21.9}$

$\boxed{C6.6}$

T.P.

929 1206 10

102 1196.81

B.M. #13

5.09 1201.01

98

95.50

10.60

$\boxed{C7.8}$

$\frac{C7.5}{23.0}$

$\frac{C5.0}{20.5}$

$\boxed{C1.5.0}$

T.P.

821 1212.88

1.43 1204.67

1212 88

97

02.50 10.38

$\boxed{C4.4} \frac{C4.3}{19.8}$

$\frac{C2.9}{18.4} \boxed{C3.2}$

96

08.63 4.25

$\boxed{C1.9} \frac{C1.9}{20.5}$

Reg slope  
 $\downarrow \frac{C1.0}{19.3}$

$\boxed{C1.3}$

T.P. 9.08 1220.19

1.77 1211.11

95

15 13.04

7.15  $\boxed{C0.6} \frac{C0.3}{18.2}$

$\frac{C1.1}{19.4} \boxed{C1.4}$

94

16.31 3.88

$\boxed{F0.3} \frac{F0.3}{17.3}$

$\frac{C0.1}{17.9} \boxed{0.0}$

~~94~~  
93

19.07 1.12

$\boxed{F0.7} \frac{F0.5}{17.0}$

$\boxed{F1.1} \frac{F1.1}{16.1} \boxed{F1.0}$

T.P. 9.67 1226.66

3.20 1216.99

92

21.57 5.09

$\boxed{0.0} \frac{0.0}{17.8}$

$\frac{F0.1}{17.6} \boxed{0.0}$

91

23.24 3.42

$\boxed{C0.5} \frac{C0.4}{18.4}$

$\frac{F1.5}{15.5} \boxed{F1.0}$

B.M.

4.35 1225.97

5.02 1221.64

90

23.27 2.70

$\boxed{C0.5} \frac{C0.5}{18.5}$

$\frac{F2.2}{14.5} \boxed{F1.7}$

89

22.47 3.50

$\boxed{C0.5} \frac{C0.5}{18.5}$

$\frac{F1.8}{15.1} \boxed{F1.6}$

88

21.67 4.30

$\boxed{C1.0} \frac{C1.0}{19.3}$

$\frac{F1.5}{15.5} \boxed{F1.2}$

T.P. 2.79 1223.65

5.11 1220.86

87

20.82 2.83

set  
 $\boxed{C1.7} \frac{C1.4}{19.9}$

set  
 $\frac{C1.4}{15.0}$

$\frac{F1.4}{15.0} \boxed{F1.2}$

86

19.64 4.01

$\boxed{C2.2} \frac{C1.7}{20.3}$

set  
 $\frac{C1.7}{15.0}$

$\frac{F1.5}{15.5} \boxed{F1.2}$

1223 65

85				18.71	
T.P.	142	1220	47	4.60	119.05
84				17.18	
83				15.95	
82				14.72	
T.P.	262	1217	60	5.49	114.98
81				13.49	
80	777			12.18	
TP,		1216	30	907	1208.53
BM,	4-13-20			7.28	1209.02
EM,	6.91	1215	96		1209.05
79				9.71	1209.05
78				07.16	
T.P.	2.29	1206	69	11.56	1201.40
77				04.61	
76				02.06	
75				99.51	
T.P.	2.88	1199	56	10.01	1194.68

stake

5.24	$\frac{C1C}{19.4}$	$\frac{C11}{14.7}$	$\frac{F1.5}{15.5}$	38
3.29	$\frac{C12}{19.1}$	$\frac{C02}{14.6}$	$\frac{F11}{16.1}$	
4.52	$\frac{C05}{18.0}$	$\frac{C00}{14.3}$	$\frac{F11}{16.1}$	
5.75	$\frac{C06}{18.7}$	$\frac{C01}{14.3}$	$\frac{F10}{16.3}$	
4.11	$\frac{C04}{17.8}$	$\frac{F01}{14.2}$	$\frac{F09}{16.1}$	
5.42	$\frac{C05}{17.9}$	$\frac{C02}{15.5}$	$\frac{00}{17.8}$	
6.25	$\frac{C22}{20.8}$	$\frac{C19}{17.0}$	$\frac{C14}{19.9}$	
8.80	$\frac{F04}{16.4}$	$\frac{F09}{16.4}$	$\frac{C08}{19.0}$	
2.08	$\frac{00}{17.3}$	$\frac{F03}{17.3}$	$\frac{F03}{17.3}$	
4.03	$\frac{F07}{16.1}$	$\frac{F07}{16.1}$	$\frac{C01}{17.6}$	
7.18	$\frac{F02}{17.3}$	$\frac{F03}{17.3}$	$\frac{C05}{18.5}$	

1199 56

1196, 0174 Rock Kl. 757

G.Rd.

stake

74		96.96	2.60	$\frac{0.8}{16.7}$	$\frac{C0.3}{18.2}$	$\frac{C0.7}{18.2}$
73		94.18	5.38	$\frac{F1.1}{15.6}$	$\frac{F1.0}{16.3}$	$\frac{F1.0}{16.3}$
72		90.93	8.63	$\frac{0.0}{17.2}$	$\frac{C1.3}{18.1}$	$\frac{C1.5}{18.1}$
71+76 P.T.		90.08	9.48	$\frac{C0.5}{17.7}$	$\frac{C2.0}{20.7}$	$\frac{C2.2}{20.7}$
T.P.	4.55	1192.79	11.32	1188.24		
71		87.23	5.56	$\frac{C1.4}{19.7}$	$\frac{C2.0}{20.7}$	$\frac{C2.5}{20.7}$
<del>70</del>		<del>83.06</del>				
P.C 70+43 <sup>c</sup>		84.94	7.85	$\frac{C0.9}{18.8}$	$\frac{C2.1}{20.9}$	$\frac{C2.5}{20.9}$
T.P.	0.62	1184.91	8.50	1184.29		
70		83.06	1.85	$\frac{C1.6}{19.3}$	$\frac{C1.0}{19.3}$	$\frac{C1.2}{19.3}$
69	9.14 '20	77.46	7.45	$\frac{C3.6}{22.7}$	$\frac{C2.1}{19.9}$	$\frac{C2.2}{19.9}$
T.P.	1.13	1176.41	9.63	1175.28		
68		71.06	5.35	$\frac{C3.0}{22.6}$	$\frac{F0.2}{17.5}$	$\frac{C0.8}{17.5}$
T.P.	1.30	1168.78	8.93	1167.48		
67		64.91	3.87	$\frac{F2.2}{14.3}$	$\frac{F2.1}{14.6}$	$\frac{F2.1}{14.6}$
66		41.66	7.12	$\frac{F1.8}{15.2}$	$\frac{F1.7}{15.2}$	$\frac{F1.7}{15.2}$
B.M.		6.76	1162.02	1162.07		

1168.80

1168.80

65 59.86 94

T.P. 252 1161 59 973 1159.07

64 58.06 93.53

63 56.26 93.33

62 54.46 93.13

61 52.66 92.93

T.P. 0.12 1152.96 875 1152.84

60 50.86 92.10

59 49.18 92.78

T.P. 3.08 1150.04 6.00 1146.96

58 48.26 92.78

57 47.46 92.58

56 46.40 92.64

55 44.83 92.21

54 42.71 92.33

B.M.#8 1.87 1148.17 1148.9

T.P. 2.93 1141.32 1165 1138.39

Stake

F2.3

 $\frac{F2.4}{14.1}$  $\frac{F1.0}{16.3}$ 

F1.5

 $\frac{F1.6}{13.9}$  $\frac{F1.6}{13.4}$ 

F0.6

 $\frac{F0.6}{14.7}$  $\frac{F0.6}{16.4}$ 

F0.1

 $\frac{C0.1}{15.6}$  $\frac{F1.1}{16.1}$ 

0.0

 $\frac{F0.2}{15.3}$  $\frac{F0.7}{16.4}$ 

F0.2

 $\frac{F0.3}{15.2}$  $\frac{F1.0}{16.3}$ 

F0.8

 $\frac{F1.0}{14.5}$  $\frac{F1.0}{16.3}$ 

F1.7

 $\frac{F1.7}{13.8}$  $\frac{F1.6}{15.4}$ 

F1.7

 $\frac{F1.7}{13.8}$  $\frac{F1.6}{15.4}$ 

0.0

 $\frac{F0.2}{15.3}$  $\frac{F0.4}{17.2}$ 

0.0

 $\frac{F0.1}{15.4}$  $\frac{F0.7}{16.4}$ 

C1.8

 $\frac{C1.6}{17.1}$  $\frac{F1.9}{14.9}$ 

Stake

F1.0

F1.5

F0.5

F1.0

F0.7

F0.9

F1.1

F1.3

F1.7

0.0

F0.8

F2.0

92

1141 32

53

40.06 1.26

0.0

$\frac{C0.2}{15.7}$

$\frac{F2.8}{14.6}$

F2.6

52

37.16 4.16

F0.2

$\frac{F0.5}{15.0}$

$\frac{F2.1}{14.6}$

F1.8

51

34.26 7.06

C0.1

$\frac{F0.1}{15.7}$

$\frac{F1.4}{15.6}$

F1.1

50

31.36 9.96

C0.8

$\frac{C0.2}{15.7}$

$\frac{F0.4}{17.1}$

C0.2

49+54<sup>2</sup>

29.93 1.39

$\frac{F0.3}{16.7}$

10.0

T.P. 3.70 1133 17

11.85 1129.47

+54<sup>2</sup>

29.93 3.24

C0.6

$\frac{C0.9}{15.9}$

48

27.43 5.74

C1.7

$\frac{C1.7}{17.1}$

$\frac{F1.8}{15.1}$

F1.5

T.P. 3.01 1127 21

8.97 1124.20

48

21.46 5.75

C.22

$\frac{C1.5}{17.0}$

$\frac{F2.5}{14.0}$

F1.3

47

16.44 0.77

F0.9

$\frac{F0.7}{16.7}$

$\frac{F0.5}{17.0}$

F0.2

T.P. #

11.47 1115.74

B.M. # 5.08 1120 90

46

1115.82

15.34 5.54

F2.7

$\frac{F2.9}{14.8}$

$\frac{F2.0}{14.9}$

F1.9

45

16.26 4.64

F4.2

$\frac{F4.3}{17.4}$

$\frac{F4.8}{18.6}$

F4.6

44

17.62 3.28

F3.4

$\frac{F3.3}{15.6}$

$\frac{F4.4}{17.8}$

F4.3

T.P. 9.58 1129 67

0.81 1120.09

ditch 5  
1:1 slope

1:1 slope

poor ck

112967

43	8-15-20	1138 03	25.46
T.P.	11.88	1138 03	352 1126.15
42			31.92
41			36.51
T.P.	7.64	1143 23	244 1135.59
40			39.86
39			39.51
38			37.80
37			34.61
T.P.	2.85	1134.45	11.63 1131.60
36			31.51
35			29.71
B.M.			356 1130.89
34			31.51
T.P.	6.28	1140 24	0.44 1134.01
33			34.21
32			35.33
B.M.#4			3.80 1136.49 1136.50

8-15-20  
AM

slope

4.21	F1.0	F1.7 15.2	F3.1 15.2	F2.7
6.11	C0.5	C0.2 18.1	F1.9 15.7	F1.3
1.52	F3.0	F3.0 15.0	F1.1 16.1	F0.9
3.67	C1.4	C1.4 19.7	C2.4 21.4	C2.4
3.72	F0.3	F0.5 17.0	F0.5 17.0	F0.1
5.43	F1.0	F1.0 16.3	C0.2 18.1	C0.2
8.62	C3.7	C2.5 21.5	C2.8 22.0	C3.0
3.14	C1.0	C0.8 19.0	C0.7 18.8	C1.0
4.74	F2.4	F2.5 14.0	F2.1 14.6	F2.1
2.94	C0.2	F0.1 17.6	F1.8 15.0	F1.8
6.08	C0.3	C0.0 17.0	C0.4 18.4	C0.4
4.96	C0.3	C0.8 18.0	C1.4 19.9	C1.0

slope

1140.29

31 35.65

30 35.97  
T.P. 543 1141 30 4.32 1135.97  
29 36.29

28 36.61

27 36.93  
B.M. 2.95 1141 36  
2.95 1138.35  
26 37.47  
2.95 1138.41

25 38.45  
T.P. 844 1145 91 3.89 1137.47  
24 39.03

23 40.85

22 42.05

21 43.25

20+50 43.51  
T.P. 3.97 1146 93 2.95 1142.96  
B.M. 212 1144.81

4.64 ✓  $\boxed{F0.1}$   $\frac{F0.4}{17.2}$   $\frac{F0.9}{16.4}$   $\boxed{F1.3}$

4.32 ✓  $\boxed{F1.1}$   $\frac{F1.2}{16.0}$   $\frac{F0.8}{16.6}$   $\boxed{F0.8}$

5.01 ✓  $\boxed{F1.1}$   $\frac{F1.0}{16.3}$   $\frac{C0.1}{17.9}$   $\boxed{0.2}$

4.69 ✓  $\boxed{F1.3}$   $\frac{F1.6}{15.7}$   $\frac{F1.0}{16.3}$   $\boxed{F1.0}$

4.37 ✓  $\boxed{F2.4}$   $\frac{F2.1}{14.6}$   $\frac{F0.8}{16.4}$   $\boxed{F1.5}$

3.89 ✓  $\boxed{F2.7}$   $\frac{F2.7}{14.4}$   $\frac{F1.6}{15.7}$   $\boxed{F1.8}$

2.91 ✓  $\boxed{F1.4}$   $\frac{F1.6}{15.4}$   $\frac{F1.6}{15.4}$   $\boxed{F1.8}$

6.26 ✓  $\boxed{0.0}$   $\frac{C0.1}{17.7}$   $\frac{F1.0}{16.3}$   $\boxed{F0.5}$

5.06 ✓  $\boxed{F0.6}$   $\frac{F0.9}{16.4}$   $\frac{F0.8}{16.6}$   $\boxed{F0.4}$

3.86 ✓  $\boxed{F1.6}$   $\frac{F1.6}{15.7}$   $\frac{F0.8}{16.6}$   $\boxed{F0.8}$

2.66 ✓  $\boxed{F1.9}$   $\frac{F1.8}{15.1}$   $\frac{F0.4}{17.1}$   $\boxed{F0.3}$

2.40 ✓  $\boxed{F1.6}$   $\frac{F1.9}{14.7}$   $\frac{F0.8}{16.6}$   $\boxed{F0.6}$

spike in E. Root Elm set 9-15-20 PM

1146 53

20

43.10

3.83 ✓

F1.1 ✓

 $\frac{F1.3}{15.8}$  $\frac{F1A}{15.7}$ 

F1.2 ✓

19

41.60

5.33 ✓

C0.7 ✓

 $\frac{C0.6}{18.6}$  $\frac{F1.0}{16.3}$ 

F0.6 ✓

18

40.10

4.83 ✓

C0.6 ✓

 $\frac{C0.5}{18.5}$  $\frac{F1.7}{15.3}$ 

F1.3 ✓

17

38.72

8.21 ✓

F0.7 ✓

 $\frac{F0.8}{16.6}$  $\frac{F1A}{15.7}$ 

F1.1 ✓

T.P. 6.84 1144 66

9.13

1137.80

16

39.08

5.66 ✓

F2.0 ✓

 $\frac{F2.1}{14.5}$  $\frac{F0.8}{16.6}$ 

F0.8 ✓

15

39.40

5.26 ✓

F2.3 ✓

 $\frac{F2.3}{14.3}$  $\frac{F0.6}{14.7}$ 

F0.4 ✓

14

39.80

4.86 ✓

F2.1 ✓

 $\frac{F2.0}{14.8}$  $\frac{F0.3}{17.3}$ 

F0.3 ✓

13

40.20

4.46 ✓

F3A ✓

 $\frac{F3.5}{16.0}$  $\frac{F0.2}{16.4}$ 

F0.9 ✓

12

AM. 9-16 20 FINE  
R.H.  
R.T.

40.60

4.06 ✓

F1.6 ✓

 $\frac{F1.6}{15.4}$  $\frac{F0.7}{16.7}$ 

F0.6 ✓

T.P. 2.76 1142 73

4.69

1139.97

11

40.52

2.21 ✓

F1.7 ✓

 $\frac{F1.5}{15.5}$  $\frac{C1.8}{20.5}$ 

C2.0 ✓

10

39.50

3.23 ✓

F2.0 ✓

 $\frac{F2.0}{14.8}$  $\frac{C1.2}{20.6}$ 

C2.0 ✓

P.T.

38.26

4.47 ✓

F2.5 ✓

 $\frac{F2.3}{14.3}$  $\frac{F1.6}{15.4}$ 

F1.3 ✓

P.I

38.71

4.02 ✓

F3.1 ✓

 $\frac{F3.0}{15.0}$  $\frac{F1.7}{15.2}$ 

F1.5 ✓

114273

T.P. 8.10 114652 4.31 1138.92  
P.C.

8 40.10 6.42

7 42.20 4.32

T.P. 9.38 115179 4.11 1142.71

6 44.30 7.49

5 46.40 5.39

4 47.60 4.19

B.M. 2 47.1 1147.08

2.35 114948 1147.13

3 47.00 2.48

2 45.37 4.11

1 43.00 6.48

0 40.50 8.98

B.M. 9.77 1139.71

✓ F2.4  $\frac{F2.1}{14.6}$   $\frac{FO.8}{16.6}$  FO.6 ✓

✓ F2.7  $\frac{F2.3}{14.5}$   $\frac{C2.9}{22.1}$  C3.1 ✓

✓ FO.6  $\frac{FO.7}{16.7}$   $\frac{C4.3}{24.2}$  C4.4 ✓

✓ F2.4  $\frac{F2.5}{14.0}$   $\frac{FO.9}{16.4}$  FO.7 ✓

✓ F2.3  $\frac{F2.3}{14.3}$   $\frac{C1.3}{19.7}$  C1.4 ✓

✓ FO.4  $\frac{FO.5}{17.0}$   $\frac{C1.8}{20.5}$  C2.2 ✓

✓ F1.4  $\frac{F1.5}{15.5}$   $\frac{FO.4}{17.2}$  FO.4 ✓

✓ F1.8  $\frac{F1.8}{15.0}$   $\frac{CO.7}{18.8}$  CO.8 ✓

✓ F1.4  $\frac{F1.5}{15.5}$   $\frac{FO.7}{17.2}$  FO.1 ✓

✓ F1.4  $\frac{F1.5}{15.5}$   $\frac{FO.9}{16.3}$  FO.9 ✓

CK -

B.M. 2.15 1114.61 1112.46

144 ✓ 3.06 11.55  
 143 ✓ 3.86 10.75  
 142 ✓ 4.21 10.40  
 141 ✓ 3.66 10.95  
 140 ✓ 2.66 11.95  
 T.P. 6.89 1118.84 2.66 1111.75  
 139 ✓ 5.89 12.95  
 138 ✓ 4.89 13.95  
 137 ✓ 3.89 14.95  
 136 ✓ 3.12 15.72  
 135 ✓ 3.76 15.08  
 134 ✓ 4.63 14.21

B.M. 4.04 1114.80

133 ✓ 5.36 13.48  
 132 ✓ 5.80 13.04  
 T.P. 4.48 1217.52 5.80 1113.04  
 131 ✓ 4.70 12.82  
 130 ✓ 4.44 13.08  
 129 ✓ 4.10 13.42  
 128 ✓ 3.76 13.76  
 127 ✓ 3.52 14.00  
 126 ✓ 3.82 13.70  
 125 ✓ 4.22 13.30  
 124 ✓ 4.62 12.90

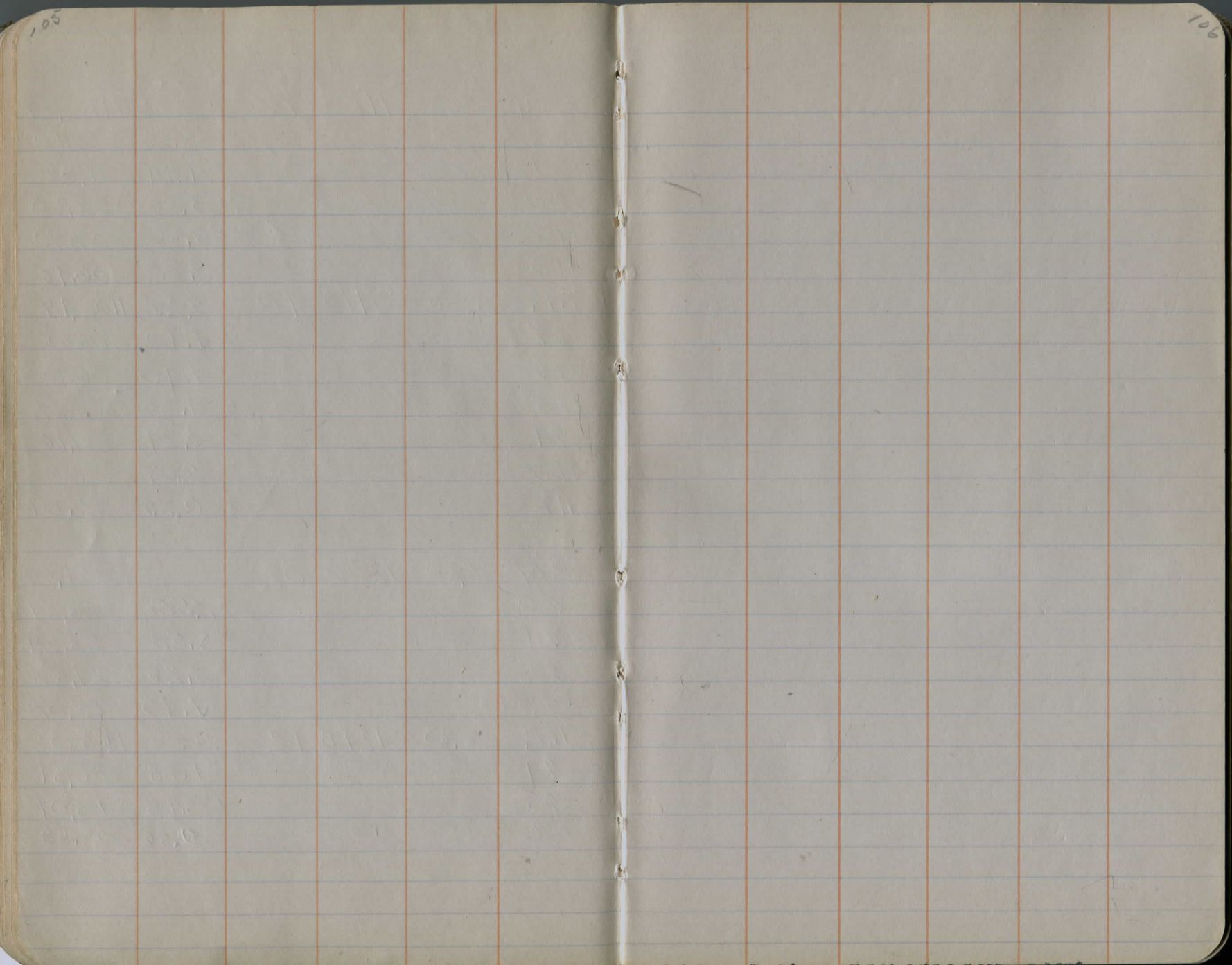
123 B.M. ✓ 5.02 12.50  
 5.45 1112.07

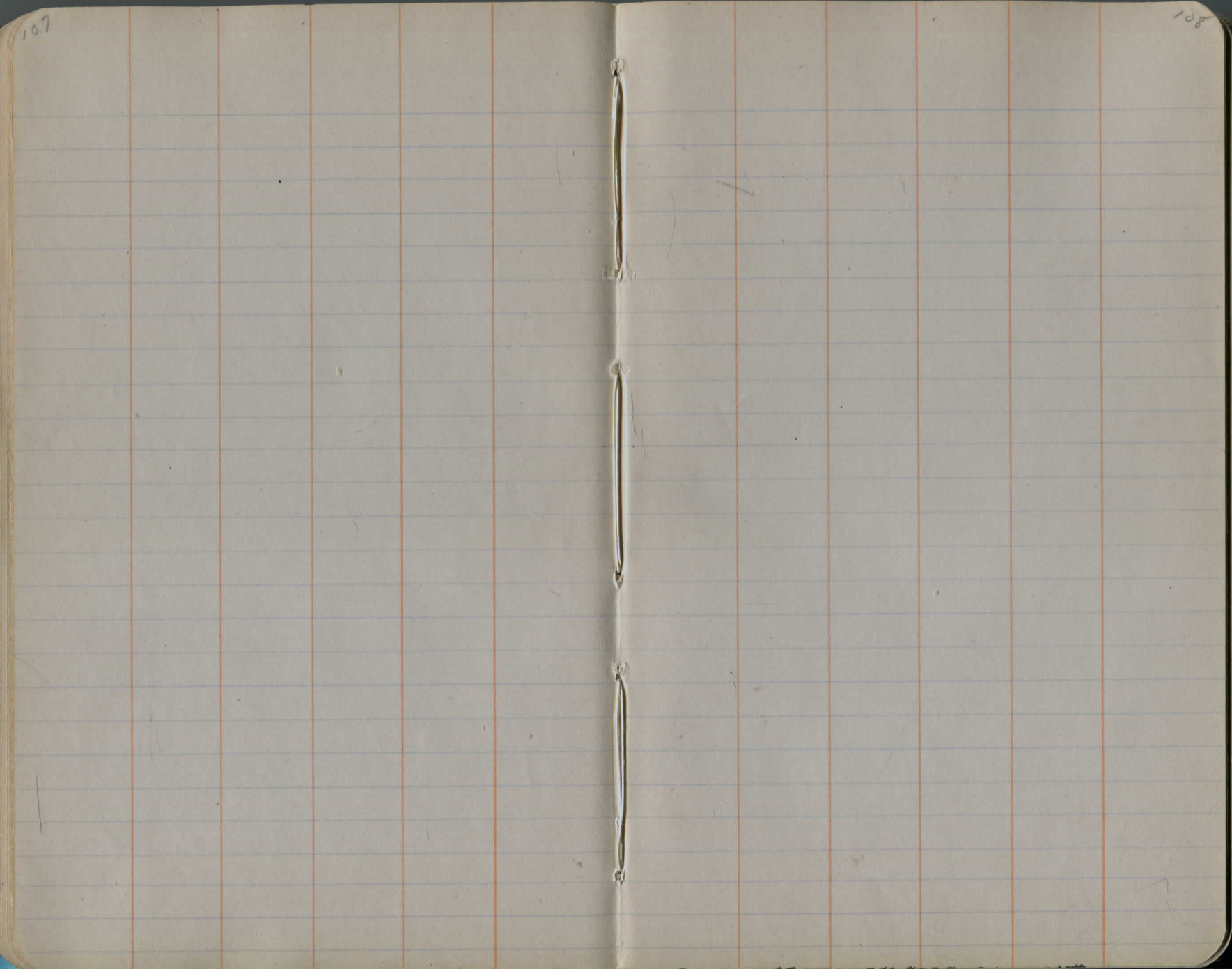
B.M. 3.69 1115.76 1112.07

122 ✓ 3.66 12.10  
 121 ✓ 4.44 11.32  
 120 ✓ 5.96 09.80  
 119 ✓ 7.86 07.90  
 118 ✓ 9.28 06.48  
 T.P. 3.93 1110.40 9.29 1106.47  
 117 ✓ 4.40 06.00  
 116 ✓ 4.40 06.00  
 115 ✓ 4.26 06.14  
 114 ✓ 3.24 07.16  
 113 ✓ 2.07 08.33  
 112 ✓ 0.39 10.01

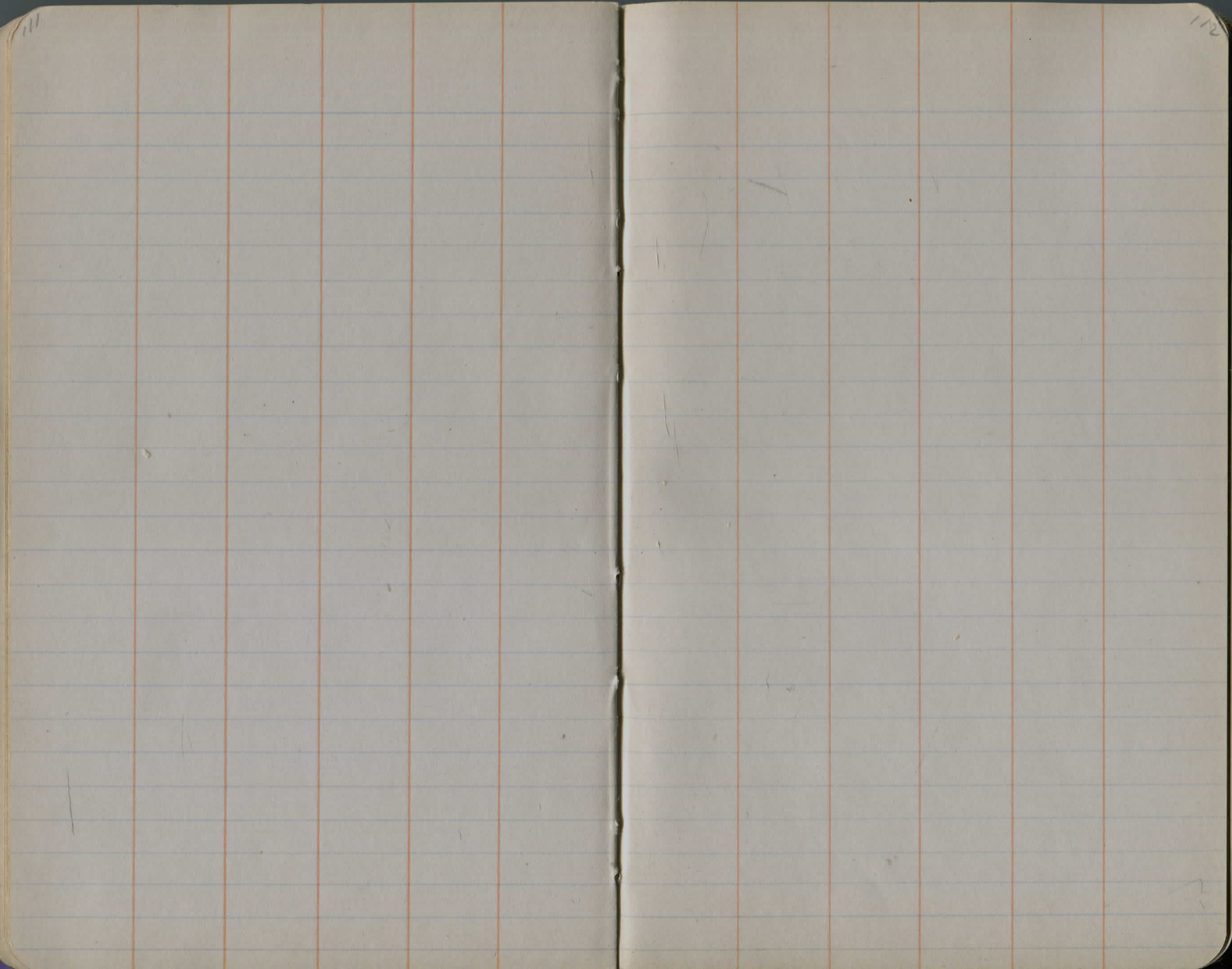
B.M. 5.20 1226.82 1221.62

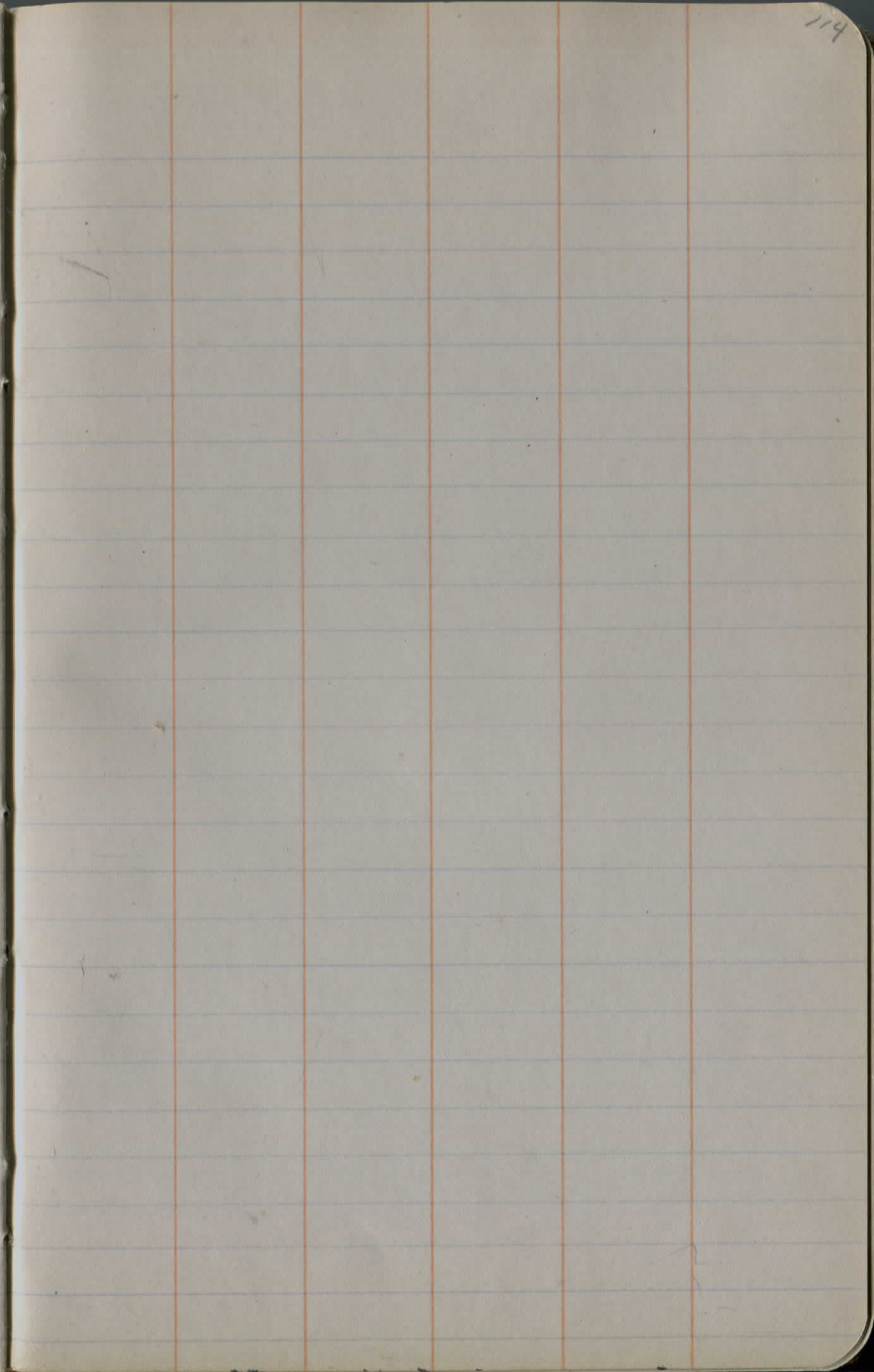
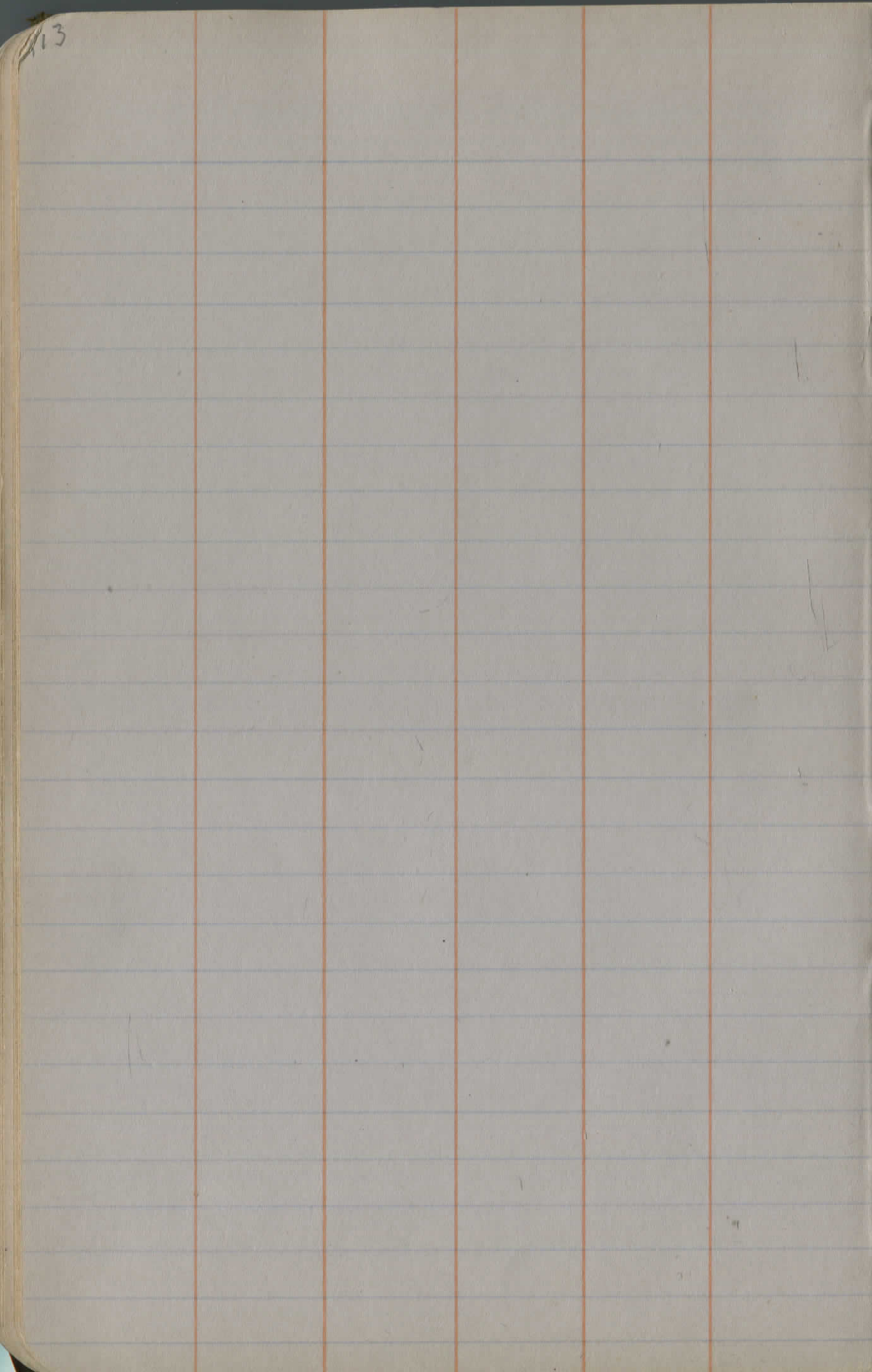
90 ✓ 3.55 23.27  
 91 ✓ 3.58 23.24  
 92 ✓ 5.25 21.57  
 93 ✓ 7.75 19.07  
 T.P. 2.83 1218.19 11.46 1215.36  
 94 ✓ 1.88 16.31  
 95 ✓ 5.15 13.04  
 96 ✓ 8.56 08.63



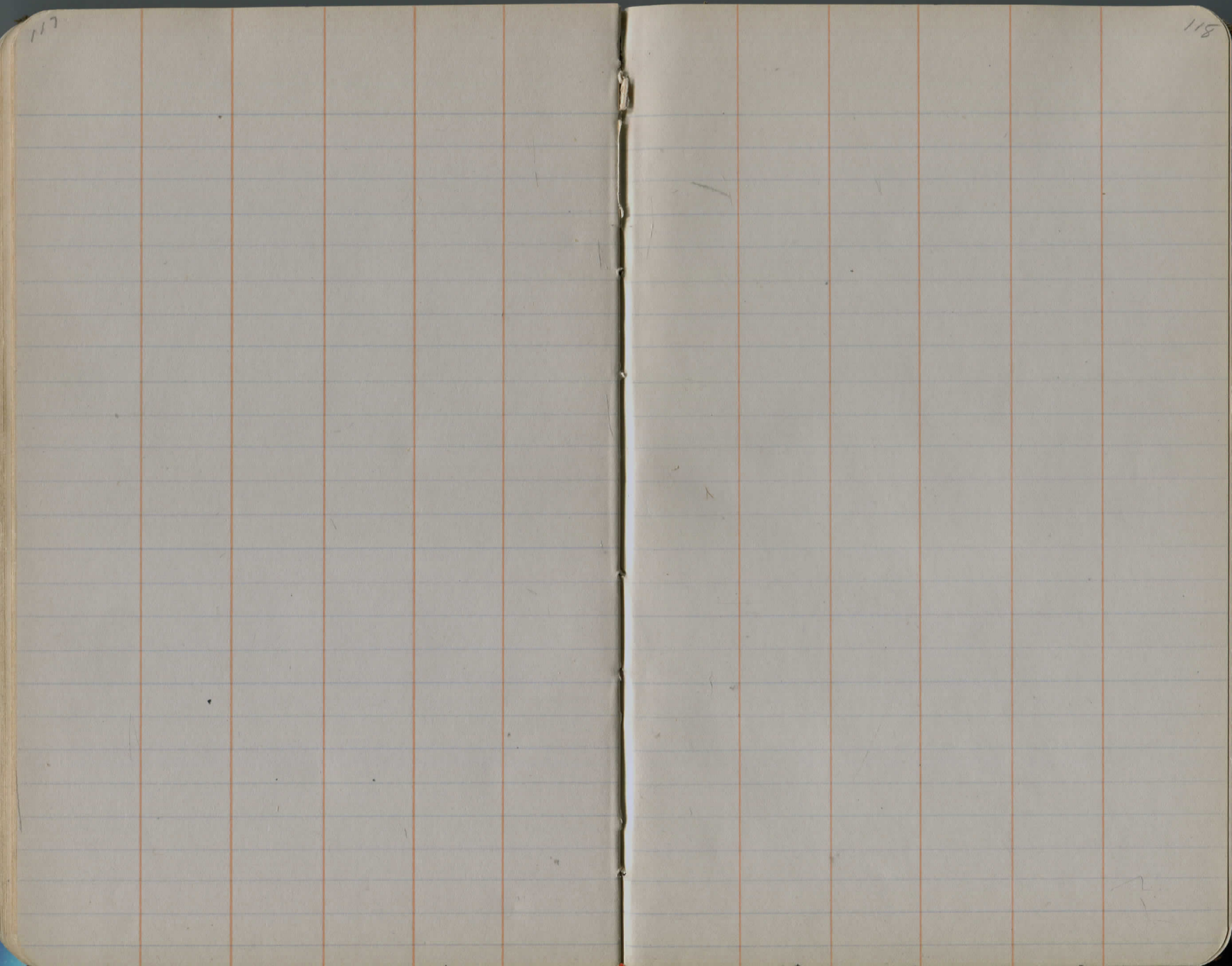








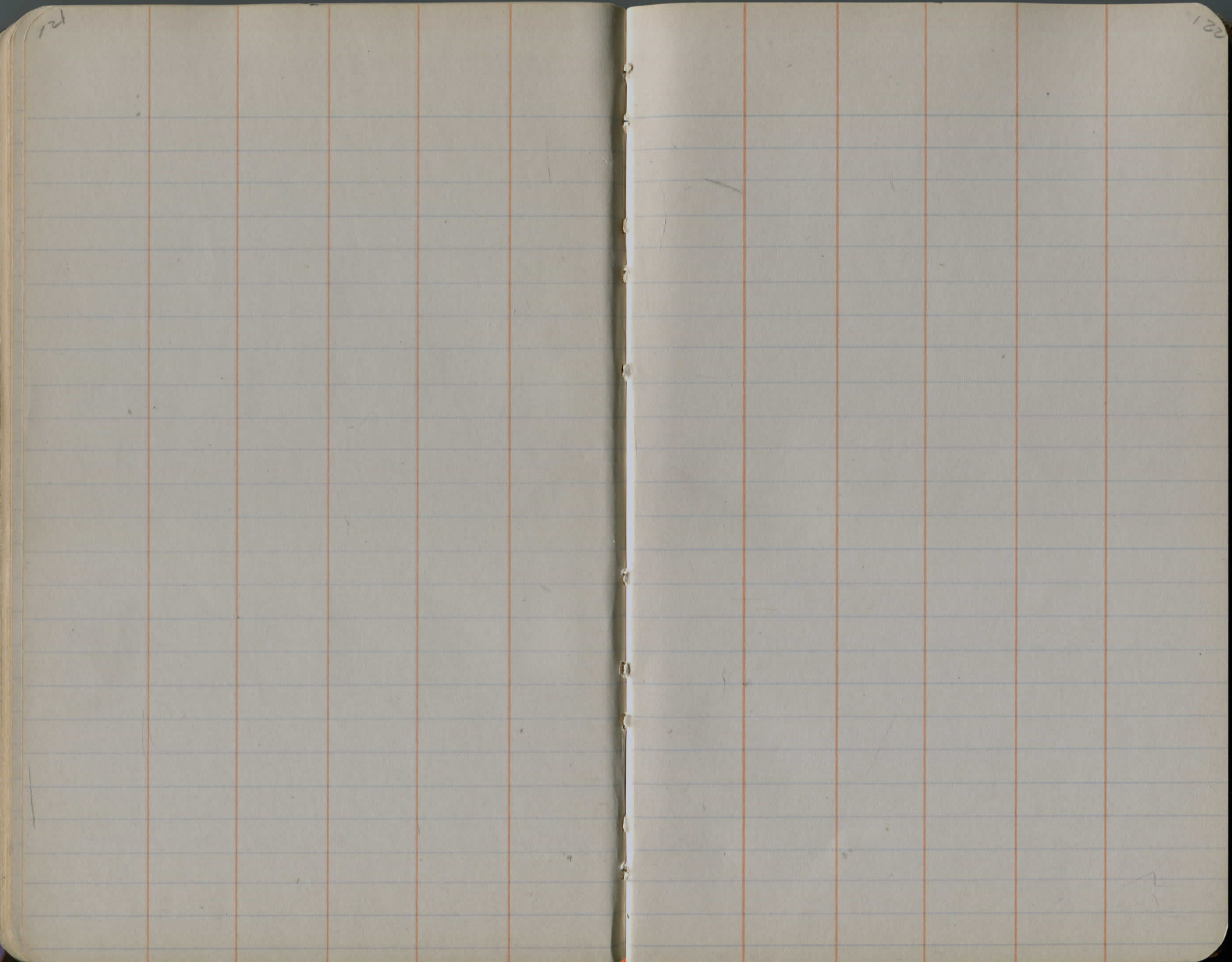




117

118





123

124

125

126















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 1900

U.S.B.M. Troy Center - Welshfield  
NW corner of foundation of  
schoolhouse; aluminum tablet stamped  
1227 ADJ 1903 - Elev - 1227.204

Elev Top of pavement at Bingericks  
Corners - 1101.00  
Pavement level 200 E of coris + 200 ft west

Tasks in top of large stump to R + (W)  
of west end big bridge. Elev 1102.05

## DIRECTIONS FOR USE OF TABLES

### TABLE No. 1.

Distance of slope stake from side or shoulder  
take for any width roadway, slope 1% to 1.  
If ground is nearly level, the cut or fill at side  
stake is found by the double entry method in  
left column and top row. The number in body

## IMPROVED TABLES

AND

## INFORMATION

### TABLE No. 2.

To find Tangent and External for curve of  
any other degree divide by degree of curve and  
add correction found in column of corrections.  
Degree of curve with a given  $L$  may be found  
by dividing tangent (or external), or  $L$  by  
given tangent (or external).  
The distance from a point on the tangent to  
the curve is very nearly the square of the tangent  
length divided by twice the radius.

## DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope  $1\frac{1}{2}$  to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

TABLE No. 9.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections.

Degree of curve with a given I may be found by dividing tangent, (or external), opposite I by given tangent, (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

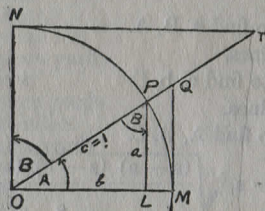


TABLE II  
TRIGONOMETRIC FORMULÆ.

$$\angle A = \angle MOP \quad \angle B = \angle PON = \angle OPL$$

$$R = OB = c = 1$$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$$

$$\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$$\text{exsec } A = PQ = \text{coexsec } B$$

$$\text{coexsec } A = PT = \text{exsec } B$$

$$\sin \frac{1}{2} A = \sqrt{\frac{1 - \cos A}{2}} \quad \cos \frac{1}{2} A = \sqrt{\frac{1 + \cos A}{2}}$$

$$\sin 2A = 2 \sin A \cos A \quad \cos 2A = \cos^2 A - \sin^2 A$$

$$\text{Law of Lines} \quad \frac{\sin A}{a} = \frac{\sin B}{B} = \frac{\sin C}{C}$$

$$\text{Law of Cosines} \quad c^2 = a^2 + b^2 - 2ab \cos C$$

$$\text{Law of Tangents} \quad \frac{a+b}{a-b} = \frac{\tan \frac{1}{2}(A+B)}{\tan \frac{1}{2}(A-B)}$$

TABLE II—Continued  
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

Given a, b, C; to find c, B, A.

Use Law of Lines.

Given A, B, c; to find a, b, C.

Use Law of Lines.

Given a, b, c; to find A, B, C.

$$\text{Let } \frac{a+b+c}{2} = s, \sqrt{\frac{(s-a)(s-b)(s-c)}{s}} = r$$

$$\cos \frac{1}{2} A = \sqrt{\frac{s(s-a)}{bc}}$$

$$\tan \frac{1}{2} A = \frac{r}{s-a}$$

$$\tan \frac{1}{2} B = \frac{r}{s-b}$$

$$\tan \frac{1}{2} C = \frac{r}{s-c}$$

Area of a triangle:

$$\text{Area} = \frac{1}{2} ab \sin C$$

$$\text{Area} = \sqrt{s(s-a)(s-b)(s-c)}$$

PRISMOIDAL FORMULA.

$$\text{Vol.} = \frac{h}{6} (B + b + 4M)$$

h = altitude; b, B = bases; M = midsection

TABLE III

INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

	0	1	2	3	4	5	6	7	8	9	10	11	
$\frac{1}{16}$	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219	$\frac{1}{16}$
$\frac{1}{8}$	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271	$\frac{1}{8}$
$\frac{3}{16}$	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323	$\frac{3}{16}$
$\frac{1}{4}$	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375	$\frac{1}{4}$
$\frac{5}{16}$	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	.6927	.7760	.8594	.9427	$\frac{5}{16}$
$\frac{3}{8}$	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479	$\frac{3}{8}$
$\frac{7}{16}$	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531	$\frac{7}{16}$
$\frac{1}{2}$	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583	$\frac{1}{2}$
$\frac{9}{16}$	.0469	.1302	.2135	.2969	.3803	.4635	.5469	.6302	.7135	.7969	.8802	.9635	$\frac{9}{16}$
$\frac{5}{8}$	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688	$\frac{5}{8}$
$\frac{11}{16}$	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740	$\frac{11}{16}$
$\frac{3}{4}$	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792	$\frac{3}{4}$
$\frac{13}{16}$	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844	$\frac{13}{16}$
$\frac{7}{8}$	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896	$\frac{7}{8}$
$\frac{15}{16}$	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948	$\frac{15}{16}$
1	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.000	1
	0	1	2	3	4	5	6	7	8	9	10	11	

TABLE IV  
USEFUL RELATIONS.

Lineal feet	×.00019	= miles
Lineal yards	×.0006	= miles
Square inches	×.007	= square feet
Square feet	×.111	= square yards
Square yards	×.0002067	= acres
Acres	×4840	= square yards
Cubic inches	×.00058	= cubic feet
Cubic feet	×.03704	= cubic yards
Links	×.22	= yards
Links	×.66	= feet
Feet	×1.5	= links

360° = 21600' = 1296000"  
Radius = arc of 57.2957790°  
Arc of 1° (radius = 1) = .017453292  
Arc of 1' (radius = 1) = .000290888  
Arc of 1" (radius = 1) = .000004848

$$\pi = 3.141592654 \quad \sqrt{\frac{1}{4}} = 0.564190$$

$$\frac{\pi}{4} = 0.785398163 \quad \sqrt[3]{\frac{6}{\pi}} = 1.240700982$$

$$\frac{\pi}{6} = 0.523598776 \quad \pi^2 = 9.869604401$$

$$\sqrt{\frac{4}{\pi}} = 1.128379167 \quad \frac{1}{\pi^2} = 0.101321184$$

$$\frac{\pi}{6} = 0.523598776 \quad \sqrt{\pi} = 1.772453851$$

$$\frac{4\pi}{3} = 4.188790205 \quad \frac{1}{\pi} = 0.3183099$$

Curvature of Earth's surface = about 0.7 feet in 1 mile  
Curvature in feet = 0.667 (Dist. in miles)<sup>2</sup>  
Difference between arc and chord length, 0.05 feet in 11½ miles

$$\text{Probable error of a single observation} = 0.6754 \sqrt{\frac{Mv^2}{n-1}}$$

Error in chaining of 0.01 feet in 100 feet:

Due to—

1. Length of tape error of 0.01 feet
2. Alignment. One end 1.4 feet out of line
3. Sag of tape at centre of 0.61 feet.
4. Temperature difference of 15°
5. Difference of pull of 15 lbs.

STADIA REDUCTION FORMULÆ.

$$\text{Horizontal Distance} = R - R \sin^2 a + C \cos a$$

$$\text{Vertical Distance} = R \frac{1}{2} \sin^2 a + C \sin a$$

$$R = \text{Reading} \times \frac{\text{distance from Object glass to cross hairs}}{\text{distance between cross hairs}}$$

C = distance from Object glass to cross hairs + distance from Object glass to center of instrument.

a = angle of elevation for mid Reading



TABLE VI (continued)  
SINES, COSINES, TANGENTS, COTANGENTS (continued)

deg	sin	tan	sin	tan	sin	tan	sin	tan	sin	tan	sin	tan	deg
	0'	10'	20'	30'	40'	50'	60'	70'	80'	90'	100'	110'	
46	7193	1.0355	7214	1.0416	7234	1.0477	7254	1.0533	7274	1.0599	7294	1.0661	43
47	314	.0724	333	.0786	353	.0850	373	.0913	392	.0977	412	.1041	42
48	431	.1106	451	.1171	470	.1237	490	.1303	509	.1369	528	.1436	41
49	547	.1504	566	.1571	585	.1640	604	.1708	623	.1778	642	.1847	40
50	660	.1918	7679	1.1988	7698	1.2059	7716	1.2131	7735	1.2203	7753	1.2276	39
51	771	.2349	790	.2423	808	.2497	826	.2572	844	.2647	862	.2723	38
52	880	.2799	898	.2876	916	.2954	934	.3032	951	.3111	969	.3190	37
53	986	.3270	8004	.3351	8021	.3452	8039	.3514	8056	.3597	8073	.3680	36
54	8090	.3764	107	.3848	124	.3934	141	.4019	158	.4106	175	.4193	35
55	192	.4281	208	.4370	225	.4460	241	.4550	258	.4641	274	.4733	34
56	290	.4826	307	.4919	323	.5013	339	.5108	355	.5204	371	.5301	33
57	387	.5399	403	.5497	418	.5597	434	.5697	450	.5798	465	.5900	32
58	480	.6003	496	.6107	511	.6212	526	.6319	542	.6426	557	.6534	31
59	572	.6643	587	.6753	601	.6864	616	.6977	631	.7090	646	.7205	30
60	660	1.7321	8675	1.7437	8689	1.7556	8704	1.7675	8718	1.7797	8732	1.7917	29
61	746	.8040	760	.8165	774	.8291	788	.8418	802	.8546	816	.8676	28
62	829	.8807	843	.8940	857	.9074	870	.9210	884	.9347	897	.9486	27
63	910	.9626	923	.9768	936	.9912	949	2.0057	962	2.0204	975	2.0353	26
64	988	2.0503	9001	2.0655	9013	2.0809	9026	.0965	9038	.1123	9051	.1283	25
65	9063	1.445	075	1.609	088	1.775	100	.1943	112	.2113	124	.2286	24
66	135	.2460	147	.2637	159	.2817	171	.2998	182	.3183	194	.3369	23
67	205	.3559	216	.3750	228	.3945	239	.4142	250	.4342	261	.4545	22
68	272	.4751	283	.4960	293	.5172	304	.5386	315	.5605	325	.5826	21
69	336	.6051	346	.6279	356	.6511	367	.6746	377	.6985	387	.7228	20
70	397	2.7475	9407	2.7725	9417	2.7980	9426	2.8239	9436	2.8502	9446	2.8770	19
71	455	.9042	465	.9319	474	.9600	483	.9887	492	3.0178	502	3.0475	18
72	511	3.0777	520	3.1084	528	3.1397	537	3.1716	546	.2041	555	.2371	17
73	563	.2709	572	.3052	580	.3402	588	.3759	596	.4124	605	.4495	16
74	613	.4874	621	.5261	628	.5656	636	.6059	644	.6470	652	.6891	15
75	659	.7321	667	.7760	674	.8208	681	.8657	689	.9136	696	.9617	14
76	703	4.0108	710	4.0611	717	4.1126	724	4.1653	730	4.2193	737	4.2747	13
77	744	.3315	750	.3897	757	.4494	763	.5107	769	.5736	775	.6382	12
78	781	.7046	787	.7729	793	.8430	799	.9152	805	.9894	811	5.0658	11
79	816	.1446	822	5.2257	827	5.3093	833	5.3955	838	5.4845	843	.5764	10
80	9848	5.6713	9853	5.7694	9858	5.8708	9863	5.9758	9868	6.0844	9872	6.1970	9
81	877	6.3138	881	6.4348	886	6.5606	890	6.6912	894	.8269	899	.9682	8
82	903	7.1154	907	7.2687	911	7.4287	914	7.5958	918	7.7704	922	7.9530	7
83	925	8.1443	929	8.3450	932	8.5555	936	8.7769	939	9.0098	942	9.2553	6
84	945	9.5144	948	9.7882	951	10.078	954	10.385	957	10.711	959	11.059	5
85	962	11.430	964	11.826	967	12.250	969	12.706	971	13.197	974	13.727	4
86	976	14.300	978	14.924	980	15.605	981	16.350	983	17.169	985	18.075	3
87	986	19.081	988	20.206	989	21.470	990	22.903	992	24.542	993	26.432	2
88	994	28.636	995	31.242	996	34.368	997	38.189	997	42.964	998	49.104	1
89	9998	57.290	9999	68.750	9999	85.940	9999	114.58	1.000	171.88	1.000	343.77	0
deg	60'	60'	50'	50'	40'	40'	30'	30'	20'	30'	10'	10'	deg
cos	cot	cos	cot	cos	cot	cos	cot	cos	cot	cos	cot	cos	

TABLE VII  
RODS IN FEET AND INCHES

Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches
1	16-6	21	346-6	41	676-6	61	1006-6	81	1336-6
2	33-0	22	363-0	42	693-0	62	1023-0	82	1353-0
3	49-6	23	379-6	43	709-6	63	1039-6	83	1369-6
4	66-0	24	396-0	44	726-0	64	1056-0	84	1386-0
5	82-6	25	412-6	45	742-6	65	1072-6	85	1402-6
6	99-0	26	429-0	46	759-0	66	1089-0	86	1419-0
7	115-6	27	445-6	47	775-6	67	1105-6	87	1435-6
8	132-0	28	462-0	48	792-0	68	1122-0	88	1452-0
9	148-6	29	478-6	49	808-6	69	1138-6	89	1468-6
10	165-0	30	495-0	50	825-0	70	1155-0	90	1485-0
11	181-6	31	511-6	51	841-6	71	1171-6	91	1501-6
12	198-0	32	528-0	52	858-0	72	1188-0	92	1518-0
13	214-6	33	544-6	53	874-6	73	1204-6	93	1534-6
14	231-0	34	561-0	54	891-0	74	1221-0	94	1551-0
15	247-6	35	577-6	55	907-6	75	1237-6	95	1567-6
16	264-0	36	594-0	56	924-0	76	1254-0	96	1584-0
17	280-6	37	610-6	57	940-6	77	1270-6	97	1600-6
18	297-0	38	627-0	58	957-0	78	1287-0	98	1617-0
19	313-6	39	643-6	59	973-6	79	1303-6	99	1633-6
20	330-0	40	660-0	60	990-0	80	1320-0	100	1650-0

TABLE VIII  
LINKS IN FEET AND INCHES

Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches
1	0-7.92	18	11-10.56	35	23-1.20	52	34-3.84	69	45-6.48	86	56-9.12
2	1-3.84	19	12-6.48	36	23-9.12	53	34-11.76	70	46-2.40	87	57-5.04
3	1-11.76	20	13-2.40	37	24-5.04	54	35-7.68	71	46-10.32	88	58-0.96
4	2-7.68	21	13-10.32	38	25-0.96	55	36-3.60	72	47-6.24	89	58-8.88
5	3-3.60	22	14-6.24	39	25-8.88	56	36-11.52	73	48-2.16	90	59-4.80
6	3-11.52	23	15-2.16	40	26-4.80	57	37-7.44	74	48-10.08	91	60-0.72
7	4-7.44	24	15-10.08	41	27-0.72	58	38-3.36	75	49-6.00	92	60-8.64
8	5-3.36	25	16-6.00	42	27-8.64	59	38-11.28	76	50-1.92	93	61-4.56
9	5-11.28	26	17-1.92	43	28-4.56	60	39-7.20	77	50-9.84	94	62-0.48
10	6-7.20	27	17-9.84	44	29-0.48	61	40-3.12	78	51-5.76	95	62-8.40
11	7-3.12	28	18-5.76	45	29-8.40	62	40-11.04	79	52-1.68	96	63-4.32
12	7-11.04	29	19-1.68	46	30-4.32	63	41-6.96	80	52-9.60	97	64-0.24
13	8-6.96	30	19-9.60	47	31-0.24	64	42-2.88	81	53-5.52	98	64-8.16
14	9-2.88	31	20-5.52	48	31-8.16	65	42-10.80	82	54-1.44	99	65-4.08
15	9-10.80	32	21-1.44	49	32-4.08	66	43-6.72	83	54-9.36	100	66-0.00
16	10-6.72	33	21-9.36	50	33-0.00	67	44-2.64	84	55-5.28	101	66-7.92
17	11-2.64	34	22-5.28	51	33-7.92	68	44-10.56	85	56-1.20	102	67-3.84

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=10°	I	T	E	I=20°	I	T	E	I=30°
1°	50.00	.218	+	11°	551.70	26.500	+	21°	1061.9	97.577	+
10'	58.34	.297		10'	560.11	27.313		10'	1070.6	99.155	
20'	66.67	.388	5° C.	20'	568.53	28.137	5° C	20'	1079.2	100.75	5° C
30'	75.01	.491	T	30'	576.95	28.974	T	30'	1087.8	102.35	T
40'	83.34	.606	.03	40'	585.36	29.824	.06	40'	1096.4	103.97	.10
50'	91.68	.733	E	50'	593.79	30.686	E	50'	1105.1	105.60	E
2°	100.01	.873	.001	12°	602.21	31.561	.006	22°	1113.7	107.24	.013
10'	108.35	1.024		10'	610.64	32.447		10'	1122.4	108.90	
20'	116.68	1.188		20'	619.07	33.347		20'	1131.0	110.57	
30'	125.02	1.364		30'	627.50	34.259		30'	1139.7	112.25	
40'	133.36	1.552		40'	635.93	35.183		40'	1148.4	113.95	
50'	141.70	1.752		50'	644.37	36.120		50'	1157.0	115.66	
3°	150.04	1.964	10° C.	13°	652.81	37.070	10° C.	23°	1165.7	117.38	10° C.
10'	158.38	2.188	T	10'	661.25	38.031	T	10'	1174.4	119.12	T
20'	166.72	2.425	.06	20'	669.70	39.006	.13	20'	1183.1	120.87	.19
30'	175.06	2.674	E	30'	678.15	39.993	E	30'	1191.8	122.63	E
40'	183.40	2.934	.003	40'	686.60	40.992	.011	40'	1200.5	124.41	.025
50'	191.74	3.207		50'	695.06	42.004		50'	1209.2	126.20	
4°	200.08	3.492		14°	703.51	43.029		24°	1217.9	128.00	
10'	208.43	3.790		10'	711.97	44.066		10'	1226.6	129.82	
20'	216.77	4.099		20'	720.44	45.116		20'	1235.3	131.65	
30'	225.12	4.421		30'	728.90	46.178		30'	1244.0	133.50	
40'	233.47	4.755		40'	737.37	47.253		40'	1252.8	135.35	
50'	241.81	5.100		50'	745.85	48.341		50'	1261.5	137.23	
5°	250.16	5.459	T	15°	754.32	49.441	T	15°	1270.2	139.11	T
10'	258.51	5.829	.09	10'	762.80	50.554	.19	10'	1279.0	141.01	.29
20'	266.86	6.211	E	20'	771.29	51.679	E	20'	1287.7	142.93	E
30'	275.21	6.606	.004	30'	779.77	52.818	.017	30'	1296.5	144.85	.038
40'	283.57	7.013		40'	788.26	53.969		40'	1305.3	146.75	
50'	291.92	7.432		50'	796.75	55.132		50'	1314.0	148.75	
6°	300.28	7.863		16°	805.25	56.309		26°	1322.8	150.71	
10'	308.64	8.307		10'	813.75	57.498		10'	1331.6	152.69	
20'	316.99	8.762		20'	822.25	58.699		20'	1340.4	154.69	
30'	325.35	9.230		30'	830.76	59.914		30'	1349.2	156.70	
40'	333.71	9.710	20° C.	40'	839.27	61.141	20° C.	40'	1358.0	158.72	20° C.
50'	342.08	10.202	T	50'	847.78	62.381	T	50'	1366.8	160.76	T
7°	350.44	10.707	.13	17°	856.30	63.634	.26	27°	1375.6	162.81	.39
10'	358.81	11.224	E	10'	864.82	64.900	E	10'	1384.4	164.86	E
20'	367.17	11.753	.006	20'	873.35	66.178	.022	20'	1393.2	166.95	.051
30'	375.54	12.294		30'	881.88	67.470		30'	1402.0	169.04	
40'	383.91	12.847		40'	890.41	68.774		40'	1410.9	171.15	
50'	392.28	13.413		50'	898.95	70.091		50'	1419.7	173.27	
8°	400.66	13.991		18°	907.49	71.421		28°	1428.6	175.41	
10'	409.03	14.582		10'	916.03	72.764		10'	1437.4	177.55	
20'	417.41	15.184	25° C.	20'	924.58	74.119	25° C.	20'	1446.3	179.72	25° C.
30'	425.79	15.799	T	30'	933.13	75.488	T	30'	1455.1	181.89	T
40'	434.17	16.426	.16	40'	941.69	76.869	.32	40'	1464.0	184.08	.49
50'	442.55	17.065	E	50'	950.25	78.264	E	50'	1472.9	186.29	E
9°	450.93	17.717	.007	19°	958.81	79.671	.028	29°	1481.8	188.51	.065
10'	459.32	18.381		10'	967.38	81.092		10'	1490.7	190.74	
20'	467.71	19.058		20'	975.96	82.525		20'	1499.6	192.99	
30'	476.10	19.746		30'	984.53	83.972		30'	1508.5	195.25	
40'	484.49	20.447		40'	993.12	85.431		40'	1517.4	197.53	
50'	492.88	21.161		50'	1001.7	86.904		50'	1526.3	199.82	
10°	501.28	21.887	30° C.	20°	1010.3	88.389	30° C.	30°	1535.3	202.12	30° C.
10'	509.68	22.624	T	10'	1018.9	89.888	T	10'	1544.2	204.44	T
20'	518.08	23.375	.19	20'	1027.5	91.399	.39	20'	1553.1	206.77	.59
30'	526.48	24.138	E	30'	1036.1	92.924	E	30'	1562.1	209.12	E
40'	534.89	24.913	.008	40'	1044.7	94.462	.034	40'	1571.0	211.48	.078
50'	543.29	25.700		50'	1053.3	96.013		50'	1580.0	213.86	

T = R tan ½ I

E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=40°	I	T	E	I=50°	I	T	E	I=60°
31°	1589.0	216.3	+	41°	2142.2	387.4	+	51°	2732.9	618.4	+
10'	1598.0	218.7		10'	2151.7	390.7		10'	2743.1	622.8	
20'	1606.9	221.1	5° C.	20'	2161.2	394.1	5° C.	20'	2753.4	627.2	5° C.
30'	1615.9	223.5	T	30'	2170.8	397.4	T	30'	2763.7	631.7	T
40'	1624.9	226.0	.13	40'	2180.3	400.8	.17	40'	2773.9	636.2	.21
50'	1633.9	228.4	E	50'	2189.9	404.2	E	50'	2784.2	640.7	E
32°	1643.0	230.9	.023	42°	2199.4	407.6	.037	52°	2794.5	645.2	.056
10'	1652.0	233.4		10'	2209.0	411.1		10'	2804.9	649.7	
20'	1661.0	235.9		20'	2218.6	414.5		20'	2815.2	654.3	
30'	1670.0	238.4		30'	2228.1	418.0		30'	2825.6	658.8	
40'	1679.1	241.0		40'	2237.7	421.4		40'	2835.9	663.4	
50'	1688.1	243.5		50'	2247.3	425.0		50'	2846.3	668.0	
33°	1697.2	246.1	10° C.	43°	2257.0	428.5	10° C.	53°	2856.7	672.7	10° C.
10'	1706.3	248.7	T	10'	2266.6	432.0	T	10'	2867.1	677.3	T
20'	1715.3	251.3	.26	20'	2276.2	435.6	.34	20'	2877.5	682.0	.42
30'	1724.4	253.9	E	30'	2285.9	439.2	E	30'	2888.0	686.7	E
40'	1733.5	256.5	.046	40'	2295.6	442.8	.075	40'	2898.4	691.4	.112
50'	1742.6	259.1		50'	2305.2	446.4		50'	2908.9	696.1	
34°	1751.7	261.8		44°	2314.9	450.0		54°	2919.4	700.9	
10'	1760.8	264.5		10'	2324.6	453.6		10'	2929.9	705.7	
20'	1770.0	267.2		20'	2334.3	457.3		20'	2940.4	710.5	
30'	1779.1	269.9		30'	2344.1	461.0		30'	2951.0	715.3	
40'	1788.2	272.6		40'	2353.8	464.6		40'	2961.5	720.1	
50'	1797.4	275.3	15° C.	50'	2363.5	468.4	15° C.	50'	2972.1	725.0	15° C.
35°	1806.6	278.1	T	45°	2373.3	472.1	T	55°	2982.7	729.9	T
10'	1815.7	280.8	.40	10'	2383.1	475.8	.51	10'	2993.3	734.8	.63
20'	1824.9	283.6	E	20'	2392.8	479.6	E	20'	3003.9	739.7	E
30'	1834.1	286.4	.070	30'	2402.6	483.4	.116	30'	3014.5	744.6	.168
40'	1843.3	289.2		40'	2412.4	487.2		40'	3025.2	749.6	
50'	1852.5	292.0		50'	2422.3	491.0		50'	3035.8	754.6	
36°	1861.7	294.9		46°	2432.1	494.8		56°	3046.5	759.6	
10'	1870.9	297.7		10'	2441.9	498.7		10'	3057.2	764.6	
20'	1880.1	300.6		20'	2451.8	502.5		20'	3067.9	769.7	
30'	1889.4	303.5	20° C.	30'	2461.7	506.4	20° C.	30'	3078.7	774.7	20° C.
40'	1898.6	306.4	T	40'	2471.5	510.3	T	40'	3089.4	779.8	T
50'	1907.9	309.3	.53	50'	2481.4	514.3	.68	50'	3100.2	784.9	.84
37°	1917.1	312.2	E	47°	2491.3	518.2	E	57°	3110.9	790.1	E
10'	1926.4	315.2	.093	10'	2501.2	522.2	.151	10'	3121.7	795.2	.225
20'	1935.7	318.1		20'	2511.2	526.1		20'	3132.6	800.4	
30'	1945.0	321.1		30'	2521.1	530.1		30'	3143.4	805.6	
40'	1954.3	324.1		40'	2531.1	534.2		40'	3154.2	810.9	
50'	1963.6	327.1		50'	2541.0	538.2		50'	3165.1	816.1	
38°	1972.9	330.2		48°	2551.0	542.2		58°	3176.0	821.4	
10'	1982.2	333.2	25° C.	10'	2561.0	546.3	25° C.	10'	3186.9	826.7	25° C.
20'	1991.5	336.3	T	20'	2571.0	550.4	T	20'	3197.8	832.0	T
30'	2000.9	339.3	.67	30'	2581.0	554.5	.85	30'	3208.8	837.3	.105
40'	2010.2	342.4	E	40'	2591.0	558.6	E	40'	3219.7	842.7	E
50'	2019.6	345.5	.117	50'	2601.1	562.8	.189	50'	3230.7	848.1	.283
39°	2029.0	348.6		49°	2611.2	566.9		59°			

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

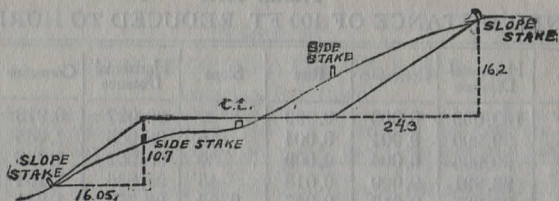
I	T	E	I=70°	I	T	E	I=80°	I	T	E	I=90°
61°	3375.0	920.2	+	71°	4086.9	1308.2	+	81°	4893.6	1805.3	+
10'	3386.3	925.9		10'	4099.5	1315.6		10'	4908.0	1814.7	
20'	3397.5	931.6	5° C.	20'	4112.1	1322.9	5° C.	20'	4922.5	1824.1	5° C.
30'	3408.8	937.3		30'	4124.8	1330.3		30'	4937.0	1833.6	
40'	3420.1	943.1	.25	40'	4137.4	1337.7	.30	40'	4951.5	1843.1	.36
50'	3431.4	948.9	E	50'	4150.1	1345.1	E	50'	4966.1	1852.6	E
62°	3442.7	954.8	.080	72°	4162.8	1352.6	.110	82°	4980.7	1862.2	.140
10'	3454.1	960.6		10'	4175.6	1360.1		10'	4995.4	1871.8	
20'	3465.4	966.5		20'	4188.5	1367.6		20'	5010.0	1881.5	
30'	3476.8	972.4		30'	4201.2	1375.2		30'	5024.8	1891.2	
40'	3488.3	978.3		40'	4214.0	1382.8		40'	5039.5	1900.9	
50'	3499.7	984.3		50'	4226.8	1390.4		50'	5054.3	1910.7	
63°	3511.1	990.2	10° C.	73°	4239.7	1398.0	10° C.	83°	5069.2	1920.5	10° C.
10'	3522.6	996.2	T	10'	4252.6	1405.7	T	10'	5084.0	1930.4	T
20'	3534.1	1002.3		20'	4265.6	1413.5		20'	5099.0	1940.3	
30'	3545.6	1008.3	.51	30'	4278.5	1421.2	.61	30'	5113.9	1950.3	.72
40'	3557.2	1014.4	E	40'	4291.5	1429.0	E	40'	5128.9	1960.2	E
50'	3568.7	1020.5	.159	50'	4304.6	1436.8	.220	50'	5143.9	1970.3	.299
64°	3580.3	1026.6		74°	4317.6	1444.6		84°	5159.0	1980.4	
10'	3591.9	1032.8		10'	4330.7	1452.5		10'	5174.1	1990.5	
20'	3603.5	1039.0		20'	4343.8	1460.4		20'	5189.3	2000.6	
30'	3615.1	1045.2		30'	4356.9	1468.4		30'	5204.4	2010.8	
40'	3626.8	1051.4		40'	4370.1	1476.4		40'	5219.7	2021.1	
50'	3638.5	1057.7	15° C.	50'	4383.3	1484.4	15° C.	50'	5234.9	2031.4	15° C.
65°	3650.2	1063.9	T	75°	4396.5	1492.4	T	85°	5250.3	2041.7	T
10'	3661.9	1070.2	.76	10'	4409.8	1500.5	.91	10'	5265.6	2052.1	1.09
20'	3673.7	1076.6	E	20'	4423.1	1508.6	E	20'	5281.0	2062.5	E
30'	3685.4	1082.9		30'	4436.4	1516.7		30'	5296.4	2073.0	
40'	3697.2	1089.3	.240	40'	4449.7	1524.9	.332	40'	5311.9	2083.5	.450
50'	3709.0	1095.7		50'	4463.1	1533.1		50'	5327.4	2094.1	
66°	3720.9	1102.2		76°	4476.5	1541.4		86°	5343.0	2104.7	
10'	3732.7	1108.6		10'	4489.9	1549.7		10'	5358.6	2115.3	
20'	3744.6	1115.1		20'	4503.4	1558.0		20'	5374.2	2126.0	
30'	3756.5	1121.7		30'	4516.9	1566.3		30'	5389.9	2136.7	
40'	3768.5	1128.2	20° C.	40'	4530.4	1574.7	20° C.	40'	5405.6	2147.5	20° C.
50'	3780.4	1134.8	T	50'	4544.0	1583.1	T	50'	5421.4	2158.4	T
67°	3792.4	1141.4	1.02	77°	4557.6	1591.6	1.22	87°	5437.2	2169.2	1.45
10'	3804.4	1148.0	E	10'	4571.2	1600.1	E	10'	5453.1	2180.2	E
20'	3816.4	1154.7	.321	20'	4584.8	1608.6	.445	20'	5469.0	2191.1	.603
30'	3828.4	1161.3		30'	4598.5	1617.1		30'	5484.9	2202.2	
40'	3840.5	1168.1		40'	4612.2	1625.7		40'	5500.9	2213.2	
50'	3852.6	1174.8		50'	4626.0	1634.4		50'	5517.0	2224.3	
68°	3864.7	1181.6		78°	4639.8	1643.0		88°	5533.1	2235.5	
10'	3876.8	1188.4		10'	4653.6	1651.7		10'	5549.2	2246.7	
20'	3889.0	1195.2	25° C.	20'	4667.4	1660.5	25° C.	20'	5565.4	2258.0	25° C.
30'	3901.2	1202.0	T	30'	4681.3	1669.2	T	30'	5581.6	2269.3	T
40'	3913.4	1208.9	1.28	40'	4695.2	1678.1	1.53	40'	5597.8	2280.6	1.83
50'	3925.6	1215.8	E	50'	4709.2	1686.9	E	50'	5614.2	2292.0	E
69°	3937.9	1222.7	.403	79°	4723.2	1695.8	.558	89°	5630.5	2303.5	.756
10'	3950.2	1229.7		10'	4737.2	1704.7		10'	5646.9	2315.0	
20'	3962.5	1236.7		20'	4751.2	1713.7		20'	5663.4	2326.6	
30'	3974.8	1243.7		30'	4765.3	1722.7		30'	5679.9	2338.2	
40'	3987.2	1250.8		40'	4779.4	1731.7		40'	5696.4	2349.8	
50'	3999.5	1257.9		50'	4793.6	1740.8		50'	5713.0	2361.5	
70°	4011.9	1265.0	30° C.	80°	4807.7	1749.9	30° C.	90°	5729.7	2373.3	30° C.
10'	4024.4	1272.1	T	10'	4822.0	1759.0	T	10'	5746.3	2385.1	T
20'	4036.8	1279.3	1.54	20'	4836.2	1768.2	1.84	20'	5763.1	2397.0	2.20
30'	4049.3	1286.5	E	30'	4850.5	1777.4	E	30'	5779.9	2408.9	E
40'	4061.8	1293.6		40'	4864.8	1786.7		40'	5796.7	2420.9	
50'	4074.4	1300.9	.485	50'	4879.2	1796.0	.671	50'	5813.6	2432.9	.910

T = R tan 1/2 I

E = R exsec 1/2 I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=100°	I	T	E	I=110°	I	T	E	I=120°
91°	5330.5	2444.9	+	101°	6950.6	3278.1	+	111°	8336.7	4386.1	+
10'	5347.5	2457.1		10'	6971.3	3294.1		10'	8362.7	4407.6	
20'	5364.6	2469.3	5° C.	20'	6992.0	3310.1	5° C.	20'	8388.9	4429.2	5° C.
30'	5381.7	2481.5	T	30'	7012.7	3326.1	T	30'	8415.1	4450.9	T
40'	5398.8	2493.8	.43	40'	7033.6	3342.3	.51	40'	8441.5	4472.7	.62
50'	5916.0	2506.1	E	50'	7054.5	3358.5	E	50'	8468.0	4494.6	E
92°	5933.2	2518.5	.200	102°	7075.5	3374.9	.268	112°	8494.6	4516.6	.360
10'	5950.5	2531.0		10'	7096.6	3391.2		10'	8521.3	4538.8	
20'	5967.9	2543.5		20'	7117.8	3407.7		20'	8548.1	4561.1	
30'	5985.3	2556.0		30'	7139.0	3424.3		30'	8575.0	4583.4	
40'	6002.7	2568.6		40'	7160.3	3440.9		40'	8602.1	4606.0	
50'	6020.2	2581.3		50'	7181.7	3457.6		50'	8629.3	4628.6	
93°	6037.8	2594.0	10° C.	103°	7203.2	3474.4	10° C.	113°	8656.6	4651.3	10° C.
10'	6055.4	2606.8	T	10'	7224.3	3491.3	T	10'	8684.0	4674.2	T
20'	6073.1	2619.7	.86	20'	7246.3	3508.2	.103	20'	8711.5	4697.2	1.25
30'	6090.8	2632.6	E	30'	7268.0	3525.2	E	30'	8739.2	4720.3	E
40'	6108.6	2645.5	.40	40'	7289.8	3542.4	.536	40'	8767.0	4743.6	.62
50'	6126.4	2658.5	E	50'	7311.7	3559.6	E	50'	8794.9	4766.9	.721
94°	6144.3	2671.6		104°	7333.6	3576.8		114°	8822.9	4790.4	
10'	6162.2	2684.7		10'	7355.6	3594.2		10'	8851.0	4814.1	
20'	6180.2	2697.9		20'	7377.8	3611.7		20'	8879.3	4837.8	
30'	6198.3	2711.2		30'	7399.9	3629.2		30'	8907.7	4861.7	
40'	6216.4	2724.5		40'	7422.2	3646.8		40'	8936.3	4885.7	
50'	6234.6	2737.9	15° C.	50'	7444.6	3664.5	15° C.	50'	8965.0	4909.9	15° C.
95°	6252.8	2751.3	T	105°	7467.0	3682.3	T	115°	8993.8	4934.1	T
10'	6271.1	2764.8	1.30	10'	7489.6	3700.2	1.56	10'	9022.7	4958.6	1.93
20'	6289.4	2778.3	E	20'	7512.2	3718.2	E	20'	9051.7	4983.1	E
30'	6307.9	2792.0	.604	30'	7534.9	3736.2	.806	30'	9080.9	5007.8	1.09
40'	6326.3	2805.6		40'	7557.7	3754.4		40'	9110.3	5032.6	
50'	6344.8	2819.4		50'	7580.5	3772.6		50'	9139.8	5057.6	
96°	6363.4	2833.2		106°	7603.5	3791.0		116°	9169.4	5082.7	
10'	6382.1	2847.0		10'	7626.6	3809.4		10'	9199.1	5107.9	
20'	6400.8	2861.0		20'	7649.7	3827.9		20'	9229.0	5133.3	
30'	6419.5	2875.0	20° C.	30'	7672.9	3846.5	20° C.	30'	9259.0	5158.8	20° C.
40'	6438.4	2889.0	T	40'	7696.3	3865.2	T	40'	9289.2	5184.5	T
50'	6457.3	2903.1	1.74	50'	7719.7	3884.0	2.08	50'	9319.5	5210.3	2.52
97°	6476.2	2917.3	E	107°	7743.2	3902.9	E	117°	9349.9	5236.2	E
10'	6495.2	2931.6	.809	10'	7766.8	3921.9	1.08	10'	9380.5	5262.3	1.46
20'	6514.3	2945.9		20'	7790.5	3940.9		20'	9411.3	5288.6	
30'	6533.4	2960.3		30'	7814.3	3960.1		30'	9442.2	5315.0	
40'	6552.6	2974.7		40'	7838.1	3979.4		40'	9473.2	5341.5	
50'	6571.9	2989.2		50'	7862.1	3998.7		50'	9504.4	5368.2	
98°	6591.2	3003.8		108°	7886.2	4018.2		118°	9535.7	5395.1	
10'	6610.6	3018.4	25° C.	10'	7910.4	4037.8	25° C.	10'	9567.2	5422.1	25° C.
20'	6630.1	3033.2	T	20'	7934.6	4057.4	T	20'	9598.9	5449.2	T
30'	6649.6	3047.9	1.8	30'	7959.0	4077.2	2.18	30'	9630.7	5476.5	3.16
40'	6669.2	3062.8									



### DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

SLOPE  $1\frac{1}{2}$  TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0 30	0 45	0 60	0 75	0 90	1 05	1 20	1 35	0
1	1 50	1 65	1 80	1 95	2 10	2 25	2 40	2 55	2 70	2 85	1
2	3 00	3 15	3 30	3 45	3 60	3 75	3 90	4 05	4 20	4 35	2
3	4 50	4 65	4 80	4 95	5 10	5 25	5 40	5 55	5 70	5 85	3
4	6 00	6 15	6 30	6 45	6 60	6 75	6 90	7 05	7 20	7 35	4
5	7 50	7 65	7 80	7 95	8 10	8 25	8 40	8 55	8 70	8 85	5
6	9 00	9 15	9 30	9 45	9 60	9 75	9 90	10 05	10 20	10 35	6
7	10 50	10 65	10 80	10 95	11 10	11 25	11 40	11 55	11 70	11 85	7
8	12 00	12 15	12 30	12 45	12 60	12 75	12 90	13 05	13 20	13 35	8
9	13 50	13 65	13 80	13 95	14 10	14 25	14 40	14 55	14 70	14 85	9
10	15 00	15 15	15 30	15 45	15 60	15 75	15 90	16 05	16 20	16 35	10
11	16 50	16 65	16 80	16 95	17 10	17 25	17 40	17 55	17 70	17 85	11
12	18 00	18 15	18 30	18 45	18 60	18 75	18 90	19 05	19 20	19 35	12
13	19 50	19 65	19 80	19 95	20 10	20 25	20 40	20 55	20 70	20 85	13
14	21 00	21 15	21 30	21 45	21 60	21 75	21 90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23 10	23 25	23 40	23 55	23 70	23 85	15
16	24 00	24 15	24 30	24 45	24 60	24 75	24 90	25 05	25 20	25 35	16
17	25 50	25 65	25 80	25 95	26 10	26 25	26 40	26 55	26 70	26 85	17
18	27 00	27 15	27 30	27 45	27 60	27 75	27 90	28 05	28 20	28 35	18
19	28 50	28 65	28 80	28 95	29 10	29 25	29 40	29 55	29 70	29 85	19
20	30 00	30 15	30 30	30 45	30 60	30 75	30 90	31 05	31 20	31 35	20
21	31 50	31 65	31 80	31 95	32 10	32 25	32 40	32 55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33 60	33 75	33 90	34 05	34 20	34 35	22
23	34 50	34 65	34 80	34 95	35 10	35 25	35 40	35 55	35 70	35 85	23
24	36 00	36 15	36 30	36 45	36 60	36 75	36 90	37 05	37 20	37 35	24
25	37 50	37 65	37 80	37 95	38 10	38 25	38 40	38 55	38 70	38 85	25
26	39 00	39 15	39 30	39 45	39 60	39 75	39 90	40 05	40 20	40 35	26
27	40 50	40 65	40 80	40 95	41 10	41 25	41 40	41 55	41 70	41 85	27
28	42 00	42 15	42 30	42 45	42 60	42 75	42 90	43 05	43 20	43 35	28
29	43 50	43 65	43 80	43 95	44 10	44 25	44 40	44 55	44 70	44 85	29
30	45 00	45 15	45 30	45 45	45 60	45 75	45 90	46 05	46 20	46 35	30
31	46 50	46 65	46 80	46 95	47 10	47 25	47 40	47 55	47 70	47 85	31
32	48 00	48 15	48 30	48 45	48 60	48 75	48 90	49 05	49 20	49 35	32
33	49 50	49 65	49 80	49 95	50 10	50 25	50 40	50 55	50 70	50 85	33
34	51 00	51 15	51 30	51 45	51 60	51 75	51 90	52 05	52 20	52 35	34
35	52 50	52 65	52 80	52 95	53 10	53 25	53 40	53 55	53 70	53 85	35
36	54 00	54 15	54 30	54 45	54 60	54 75	54 90	55 05	55 20	55 35	36
37	55 50	55 65	55 80	55 95	56 10	56 25	56 40	56 55	56 70	56 85	37
38	57 00	57 15	57 30	57 45	57 60	57 75	57 90	58 05	58 20	58 35	38
39	58 50	58 65	58 80	58 95	59 10	59 25	59 40	59 55	59 70	59 85	39
40	60 00	60 15	60 30	60 45	60 60	60 75	60 90	61 05	61 20	61 35	40
41	61 50	61 65	61 80	61 95	62 10	62 25	62 40	62 55	62 70	62 85	41
42	63 00	63 15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64 35	42
43	64 50	64 65	64 80	64 95	65 10	65 25	65 40	65 55	65 70	65 85	43
44	66 00	66 15	66 30	66 45	66 60	66 75	66 90	67 05	67 20	67 35	44
45	67 50	67 65	67 80	67 95	68 10	68 25	68 40	68 55	68 70	68 85	45
46	69 00	69 15	69 30	69 45	69 60	69 75	69 90	70 05	70 20	70 35	46
47	70 50	70 65	70 80	70 95	71 10	71 25	71 40	71 55	71 70	71 85	47
48	72 00	72 15	72 30	72 45	72 60	72 75	72 90	73 05	73 20	73 35	48
49	73 50	73 65	73 80	73 95	74 10	74 25	74 40	74 55	74 70	74 85	49
50	75 00	75 15	75 30	75 45	75 60	75 75	75 90	76 05	76 20	76 35	50

Computed by L. Leland Locke.

00 = 18 feet  
F 2.5 = 14

1102

$\frac{78}{417}$

250

$\frac{72}{82}$

$\frac{75}{27}$

15.2

7-9

$\frac{172}{77}$

3.2

6.83

77

PLEASE RETURN TO  
GEAUGA COUNTY ENGINEER  
COURT HOUSE  
CHARDON, O.  
PHONE 250-X

1102

6.83

1109

$\frac{25}{8}$   
43

